

TEAC

SERVICE MANUAL

DV-H500

DVD Player

NOTES

- PC boards shown are viewed from parts side.
- The parts with no reference number or parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- ⚠ Parts marked with this sign are critical components. They must be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.
- Parts of [] mark can be used only with the version designated.
[J] : JAPAN [US] : U.S.A. [C] : CANADA
[E] : EUROPE [UK] : U.K. [GE] : GENERAL EXPORT

SECTION 1

SUMMARY

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PRODUCT SAFETY SERVICING GUIDELINES FOR VIDEO PRODUCTS

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

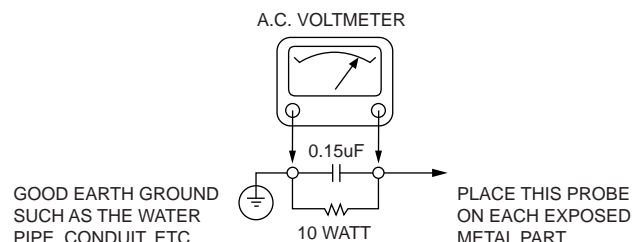
SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED. A CHECK SHOULD BE MADE OF THE FOLLOWING.

SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD). AND REPLACE IF NECESSARY FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES, DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS. HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER; CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD, 150.V A.C TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART.

VOLTAGE MEASURE MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS A.C ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" WITHIN THE PRODUCT'S ENCLOSURE THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE USER TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTIONS IN THE LITERATURE ACCOMPANYING THE APPLIANCE.

SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE. OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT. MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.'S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

SERVICING PRECAUTIONS

CAUTION : Before servicing the DVD player covered by this service data and its supplements and addends, read and follow the **SAFETY PRECAUTIONS**. **NOTE :** if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publications, always follow the safety precautions. *Remembers Safety First:*

General Servicing Precautions

1. Always unplug the DVD player AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
 - (2) Disconnection or reconnecting any internal electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor.**Caution :** A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this DVD player or any of its assemblies.
3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cottontipped swab, or comparable soft applicator.
Unless specified otherwise in this service data, lubrication of contacts is not required.
4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
5. Do not apply AC power to this DVD player and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
6. Always connect test instrument ground lead to the appropriate ground before connection the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter(500V) to the blades of the attachment plug. The insulation resistance between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1M-ohm.

Note 1 : Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical Es devices are integrated circuits and some field effect transistors and semiconductor chip components.

The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified a "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freonpropelled chemicals. These can generate electrical charge sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil, or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

Caution : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Normally harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

SPECIFICATIONS

DVD VIDEO PLAYER

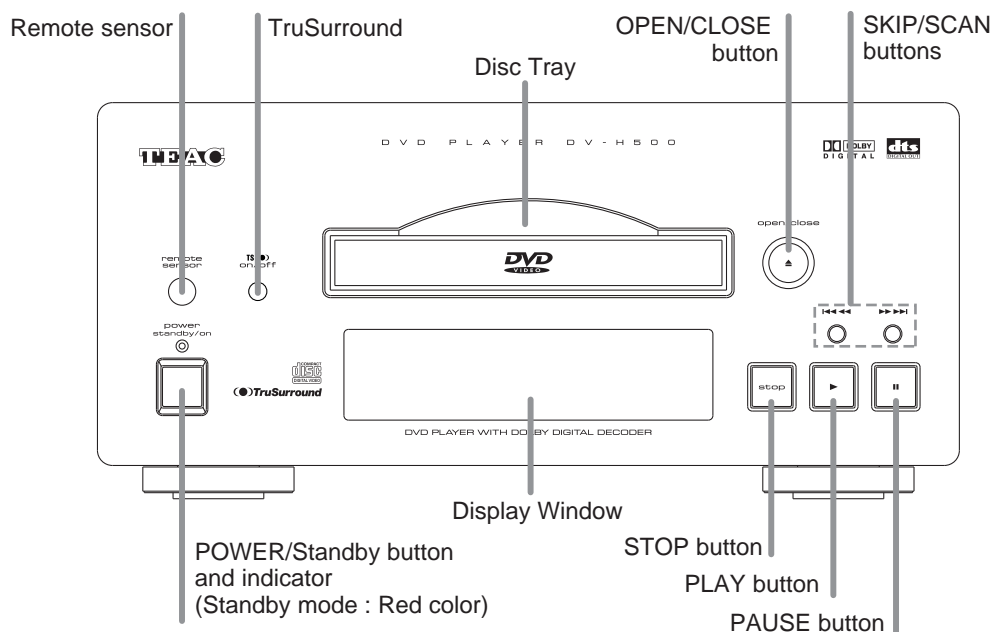
Power supply	AC 230 V, 50 Hz (EUR)/ 120 V, 60 Hz (US/CANADA)
Power consumption	22 W
External dimensions (W x H x D)	285 x 131 x 292 mm
Weight (net)	3.9 kg
Signal system	PAL (EUR)/NTSC (US/CANADA)
Laser	Semiconductor laser, wavelength 650 nm
Frequency range (digital audio)	2 Hz to 22 kHz
Signal-to-noise rating (digital audio)	More than 105 dB (EIAJ)
Audio dynamic range (digital audio)	More than 92 dB (EIAJ)
Harmonic distortion (digital audio)	0.008%
Wow and flutter	Below measurable level (less than + 0.001% (W.PEAK)) (EIAJ)
Operating conditions	Temperature: 41°F to 95°F, Operation status: Horizontal

OUTPUTS

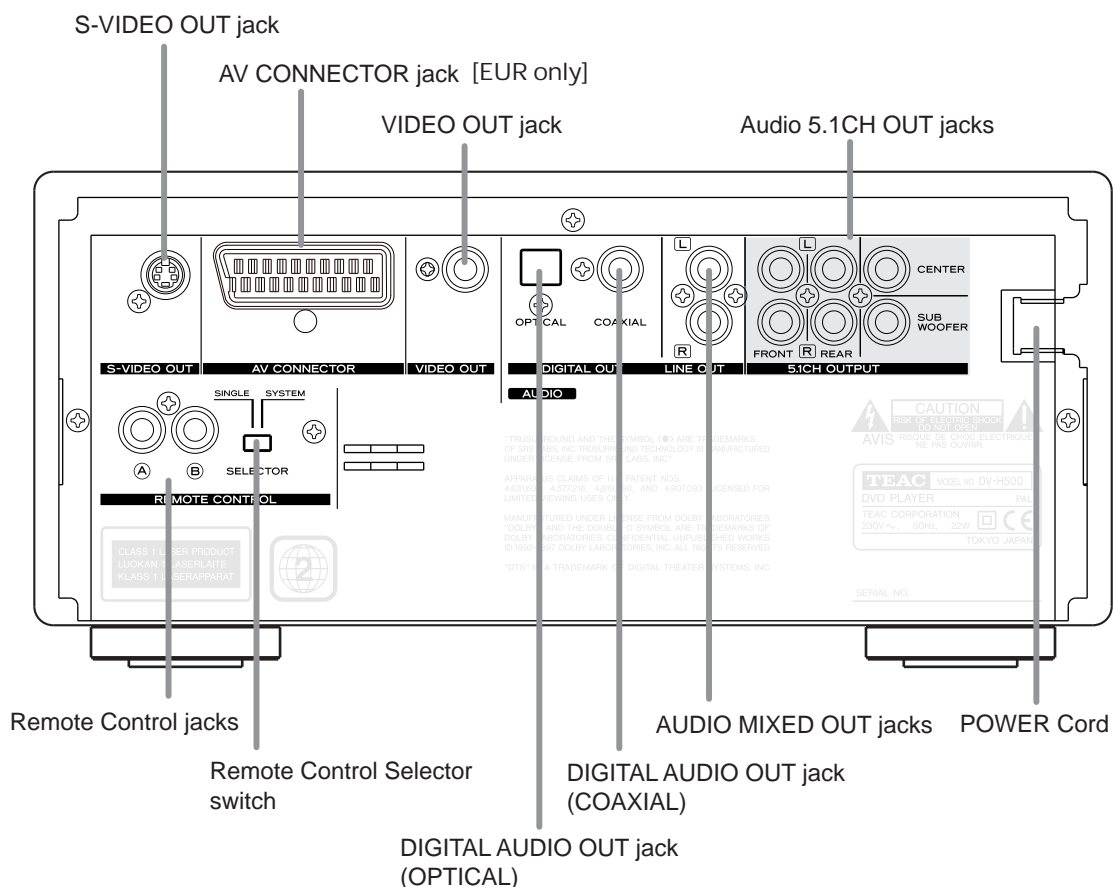
Video output	1.0 V (p-p), 75 Ω , negative sync., RCA jack x 1
S-video output	(Y) 1.0 V (p-p), 75 Ω , negative sync., Mini DIN 4-pin x 1 (C) 0.286 V (p-p) 75 Ω
Audio output (digital audio)	0.5 V (p-p), 75 Ω , RCA jack x 1
Audio output (analog audio)	2.0 Vrms (1 kHz, 0 dB), RCA jack x1

LOCATION OF CUSTOMER CONTROLS

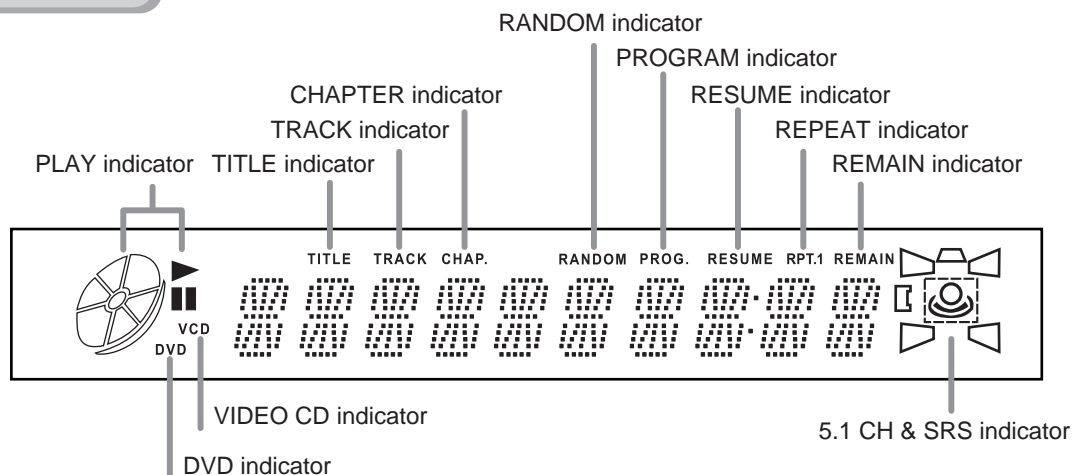
FRONT PANEL



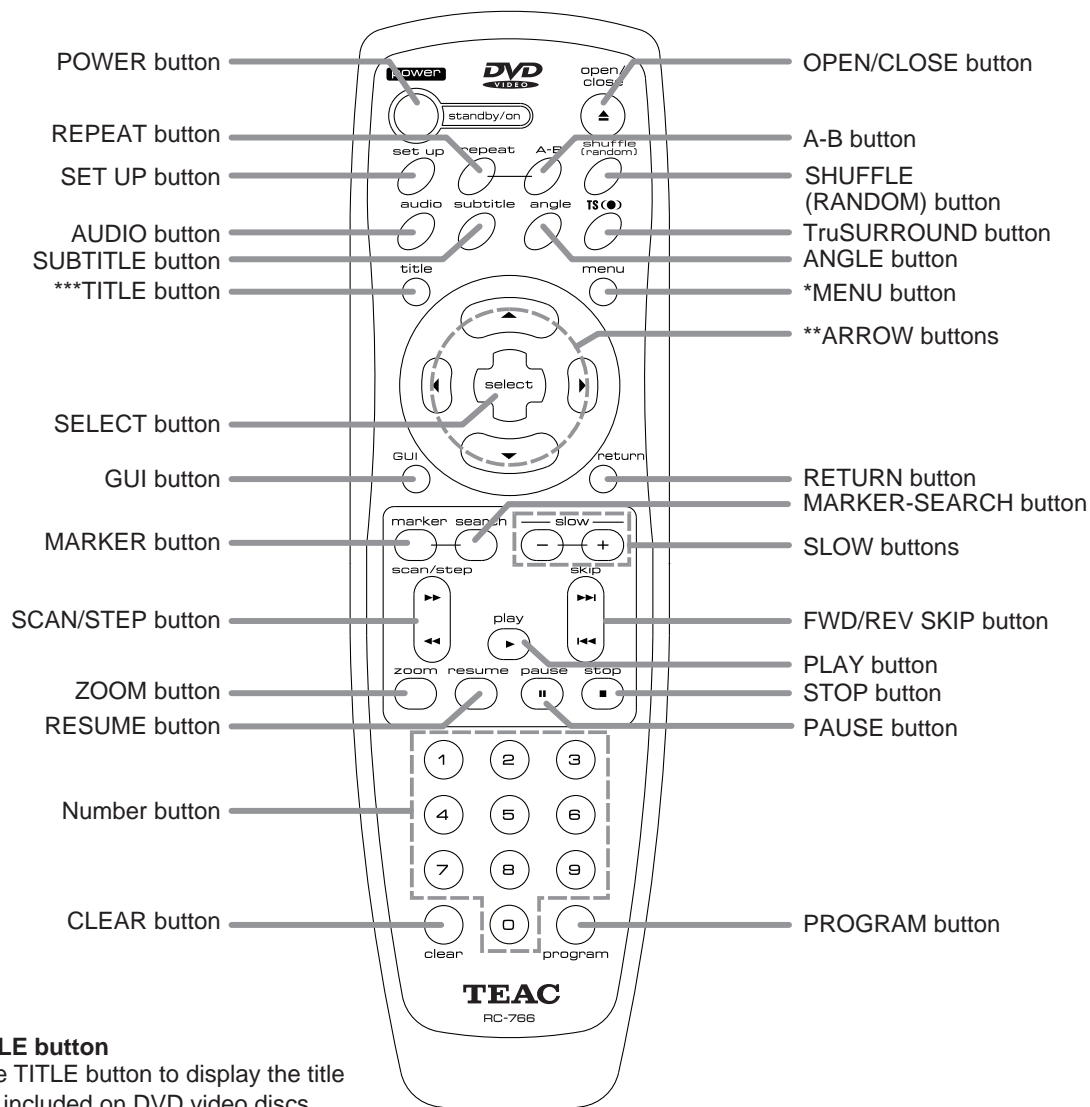
REAR PANEL



DISPLAY Window



REMOTE CONTROL



*** TITLE button

Use the TITLE button to display the title screen included on DVD video discs. To operate a menu screen, follow the instructions in "Using a Title Menu".

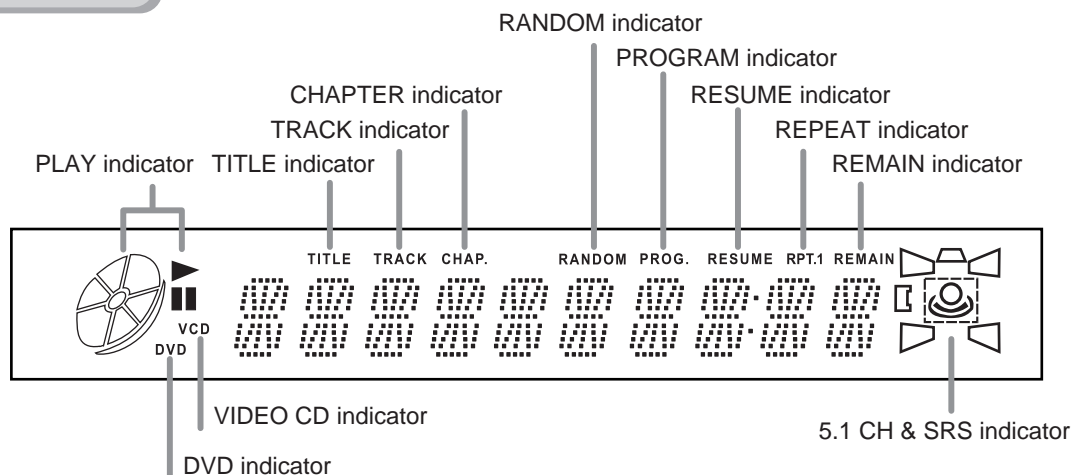
* MENU button

Use the MENU button to display the menu screen included on DVD video discs. To operate a menu screen, follow the instructions in "Using a DVD Menu".

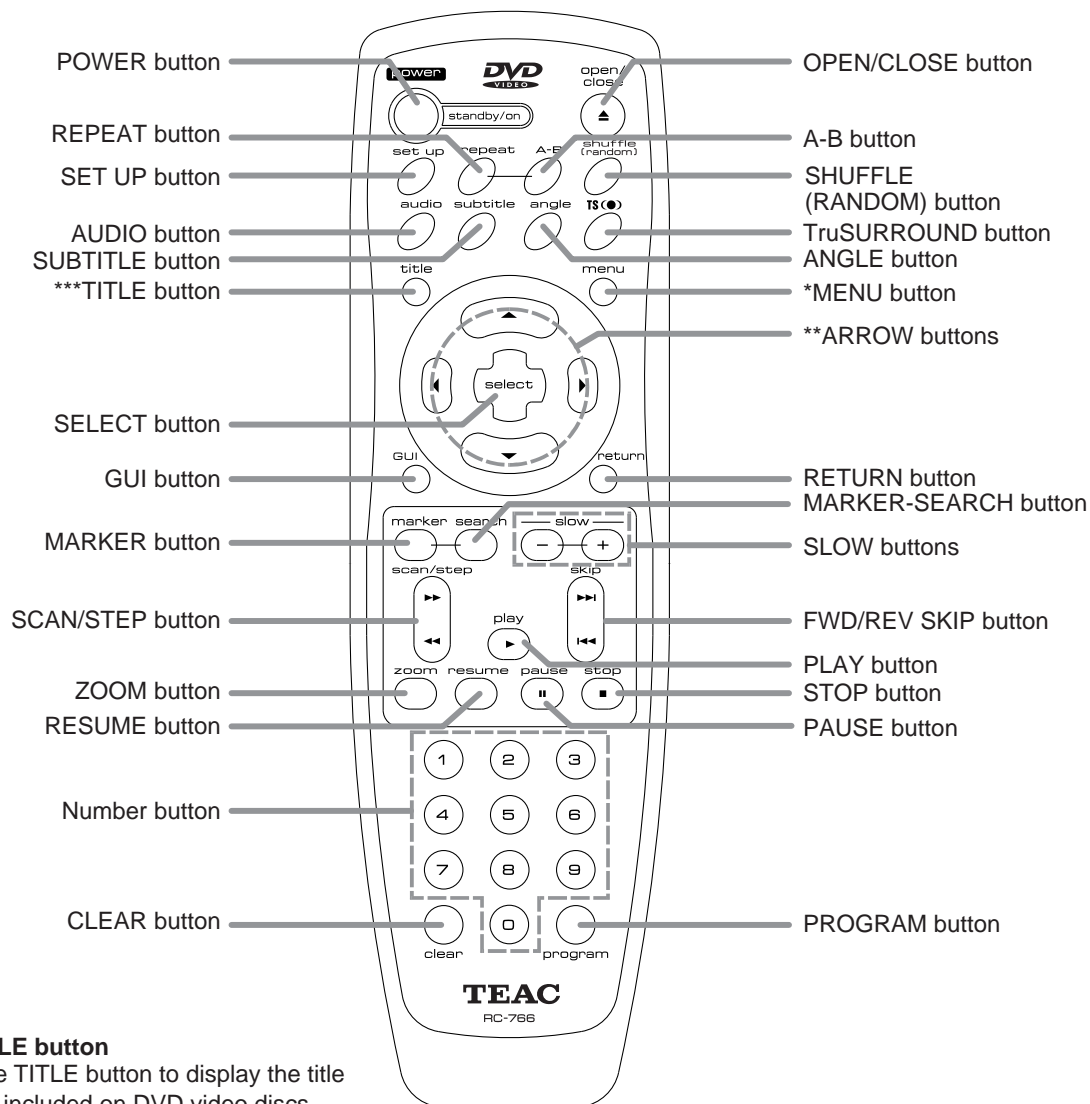
** Directional arrow buttons

(up, down, left, right) for use in highlighting a selection on a GUI menu screen, TITLE and MENU screen

DISPLAY Window



REMOTE CONTROL



*** TITLE button

Use the TITLE button to display the title screen included on DVD video discs. To operate a menu screen, follow the instructions in "Using a Title Menu".

* MENU button

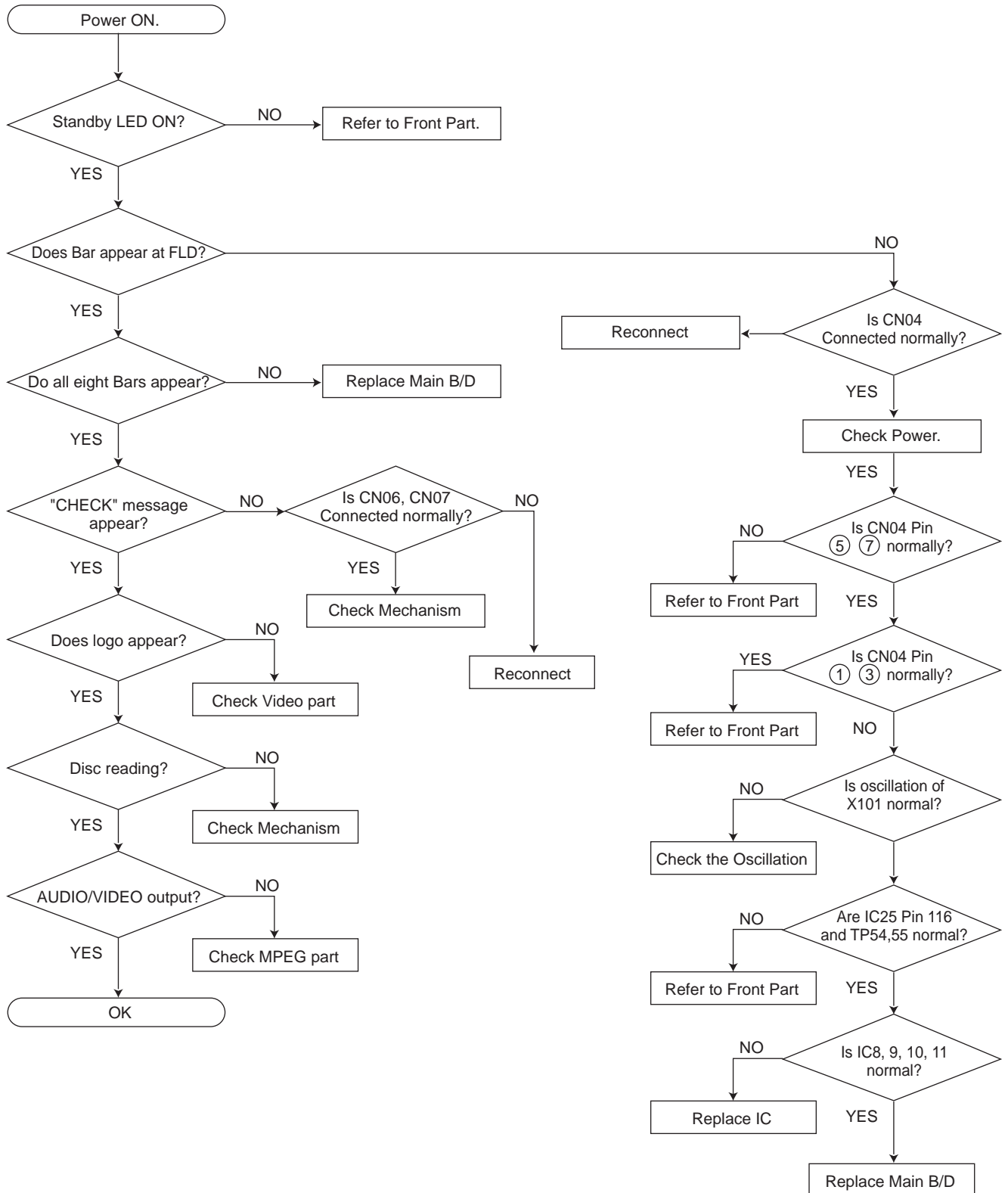
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(up, down, left, right) for use in highlighting a selection on a GUI menu screen, TITLE and MENU screen

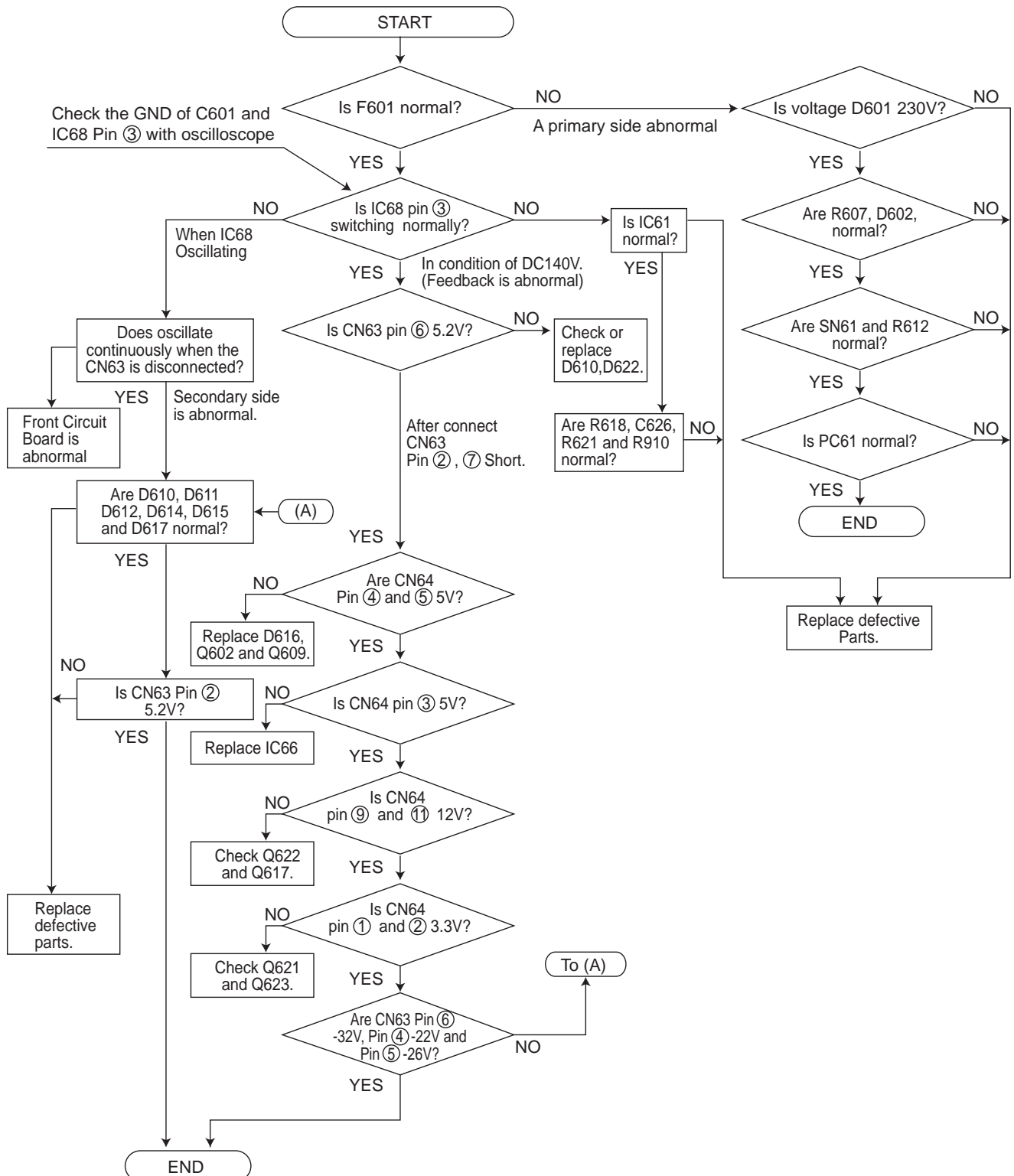
ELECTRICAL TROUBLESHOOTING GUIDE

1. SYSTEM CHECK

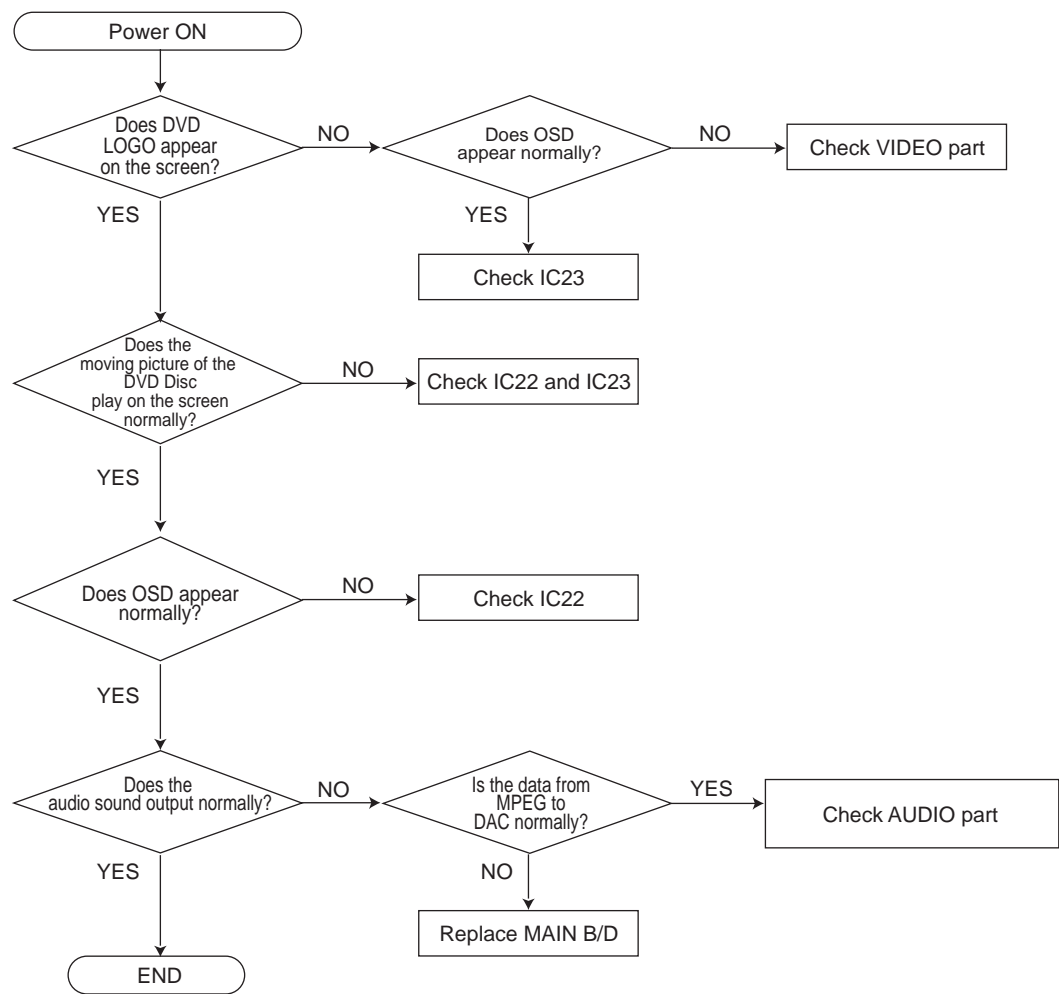


2. Power Circuit

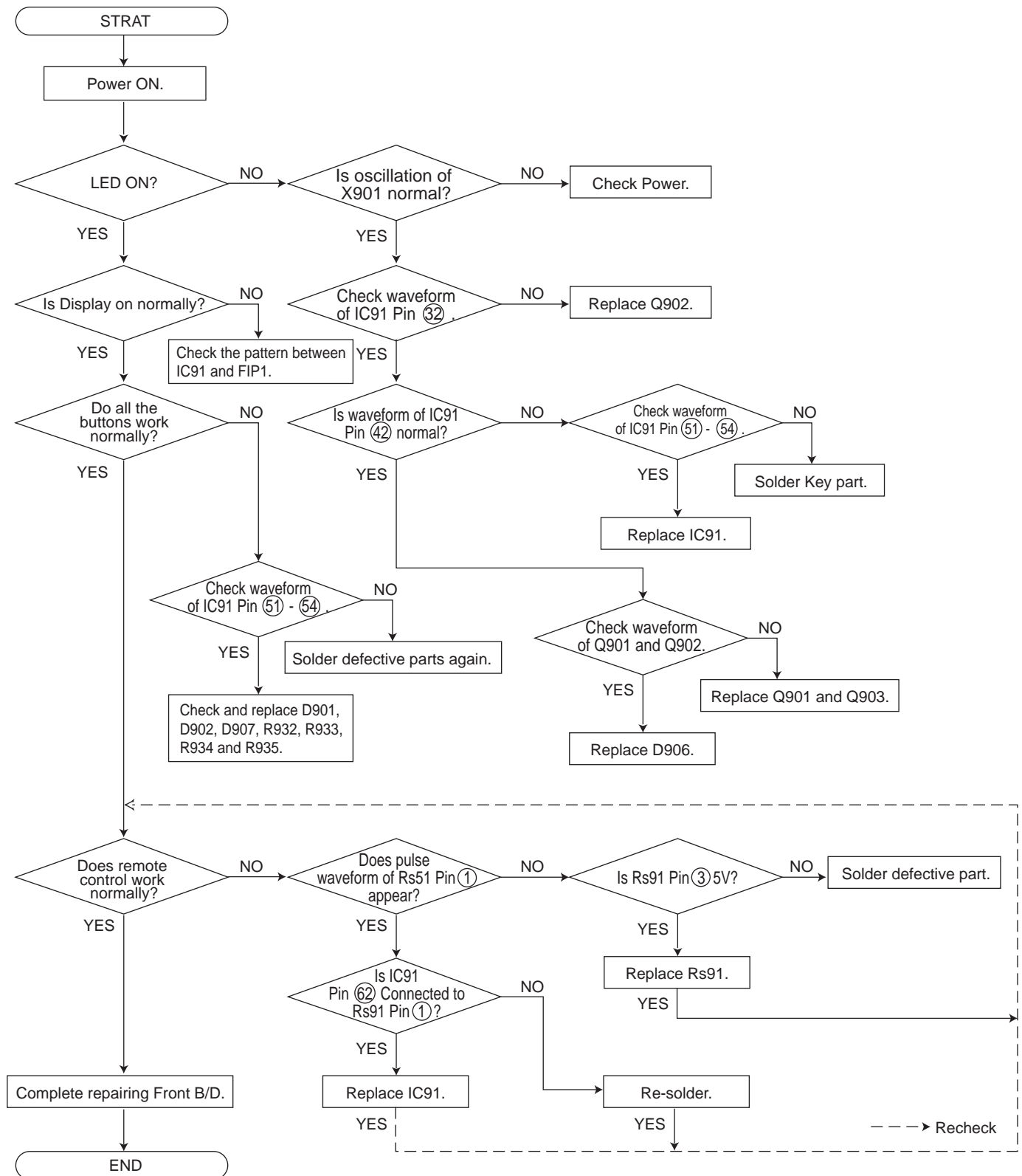
- Input Voltage : 230 V
- It is possible to malfunction, if the unload condition is left for a long time when power on.
(More than Dummy load 100mA)
- The resistor value of both terminal is measured with DVM crossing each other to check the each element is normal or abnormal.
(It is normal when the numerical value is different each other.)



3. MPEG Circuit

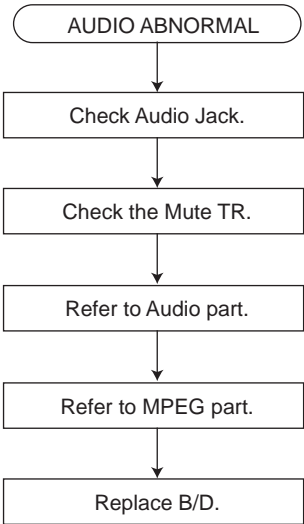


4. FRONT Circuit (Digtron & Key)

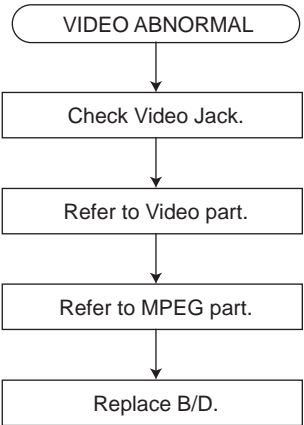


5. ETC

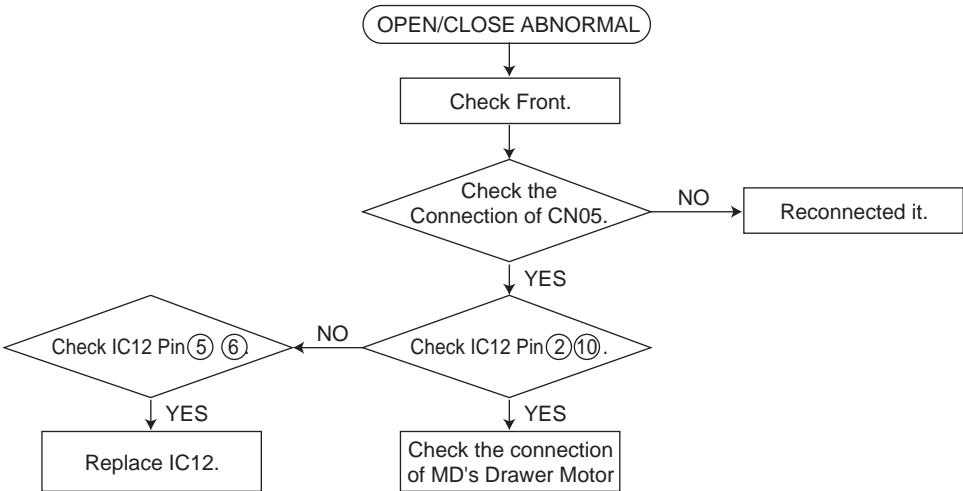
A. Audio abnormal



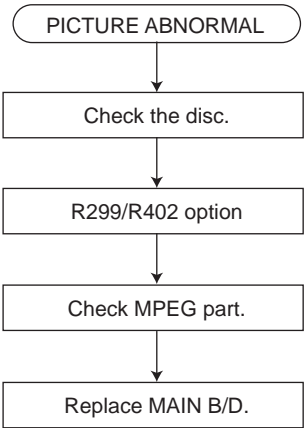
D. Video abnormal



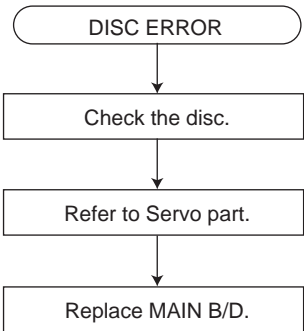
B. OPEN/CLOSE abnormal



E. PICTURE abnormal



C. DISC ERROR



IC BLOCK DIAGRAMS & PIN DESCRIPTION

1. IC25 (STi5505 DVD BACKEND-DECODER)

● PIN DESCRIPTION

Pin	Name	Type	Function
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SUPPLIES

1, 18, 34, 67, 75, 86, 95, 102, 110, 119, 130, 139, 149, 159, 171, 184, 208	V _{DD}		Power Supply (3.3 V)
4, 19, 35, 68, 77, 87, 96, 103, 111, 120, 131, 140, 150, 160, 172, 185, 200	GND		Ground
53, 60	V _{DDA}		Analog Power Supply for DENC D/A Converters (3.3 V)
54, 61	V _{SSA}		Analog Ground for DENC D/A Converters
48	V _{DDA_PCM}		Analog Power Supply for PLL PCM (3.3 V)
49	V _{REF_PCM}		Analog Reference for PLL PCM (3.3 V)
50	V _{SSA_PCM}		Analog Ground for PLL PCM

FRONT-END INTERFACE

36	B_DATA	I	I ² S Data (DVD) or PARA_DATA[2] (DVD//) or Link Data (DVB/DSS)
40	B_WCLK	I/O	I ² S Word Clock or NRSS_CLK (DVB/DSS)
37	B_BCLK	I	I ² S Bit Clock (DVD) or PARA_DATA[3] (DVD//) or Link Bit Clock (DVB/DSS)
38	B_FLAG	I	Error Flag (DVD) or PARA_DATA [4] (DVD//) or Link Sync (DVB/DSS)
39	B_SYNC	I	Sector / Abs Time Sync (DVD) or PARA_DATA[5] (DVD//) or Link Not Valid (DVB/DSS)
42	B_V4	I	Versatile Input Pin (Subcode Input) or NRSS_IN (DVB/DSS)

VIDEO OUTPUT INTERFACE

57	R_OUT	O	Red Output
56	G_OUT	O	Green Output
55	B_OUT	O	Blue Output
63	C_OUT	O	Chroma Output
64	CV_OUT	O	Composite Video Output
62	Y_OUT	O	Luma Output
59	I_REF_DAC_RGB	I	DAC Current Reference
66	I_REF_DAC_YCC	I	DAC Current Reference
58	V_REF_DAC_RGB	I	DAC Voltage Reference
65	V_REF_DAC_YCC	I	DAC Voltage Reference
117	OSD_ACTIVE	I/O	OSD Active
118	PIXCLK_27MHz	I	System Clock Input
51	HSYNC	I/O	Horizontal Sync
52	ODD/EVEN	I/O	Vertical Sync

AC-3/MPEG1-2 AUDIO OUTPUT INTERFACE

43	SCLK	O	Serial Bit Clock
44	PCM_OUT0	O	Audio Serial Output Data 0
24	PCM_OUT1	O	Audio Serial Output Data 1
21	PCM_OUT2	O	Audio Serial Output Data 2
45	PCM_CLK	I/O	PCM Clock In or Out
46	LRCLK	O	Left/Right Clock
47	SPDIF_OUT	I/O	S/PDIF Output (Tristated after reset)

EXTERNAL INTERRUPTS

23, 25	IRQ[0:1]	I	External Interrupts
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IC BLOCK DIAGRAMS & PIN DESCRIPTION

1. IC25 (STi5505 DVD BACKEND-DECODER)

● PIN DESCRIPTION

Pin	Name	Type	Function
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SUPPLIES

1, 18, 34, 67, 75, 86, 95, 102, 110, 119, 130, 139, 149, 159, 171, 184, 208	V _{DD}		Power Supply (3.3 V)
4, 19, 35, 68, 77, 87, 96, 103, 111, 120, 131, 140, 150, 160, 172, 185, 200	GND		Ground
53, 60	V _{DDA}		Analog Power Supply for DENC D/A Converters (3.3 V)
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VIDEO OUTPUT INTERFACE

57	R_OUT	O	Red Output
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66	I_REF_DAC_YCC	I	DAC Current Reference
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117	OSD_ACTIVE	I/O	OSD Active
118	PIXCLK_27MHz	I	System Clock Input
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52	ODD/EVEN	I/O	Vertical Sync

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45	PCM_CLK	I/O	PCM Clock In or Out
46	LRCLK	O	Left/Right Clock
47	SPDIF_OUT	I/O	S/PDIF Output (Tristated after reset)

EXTERNAL INTERRUPTS

23, 25	IRQ[0:1]	I	External Interrupts
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Pin	Name	Type	Function
EXTERNAL MEMORY INTERFACE			
161-170, 173-183	ADR[1:21]	I/O	External Memory Address Bus
141-148, 151-158	DATA[0:15]	I/O	External Memory Data Bus
128	$\overline{\text{RAS1/HOLDREQ}}$	O	DRAM RAS or reserved
136	WAIT/READY	I/O	External Wait States or Reserved
133	R/W/DMAACK	I/O	DRAM R/W Strobe or Reserved
121, 122	$\overline{\text{BE}}[0:1]$	O	Byte enable
129	$\overline{\text{CAS0/HOLDACK}}$	O/I	DRAM CAS or Reserved
132	$\overline{\text{CAS1/DMAREQ}}$	O	DRAM CAS or Reserved
124-126	$\overline{\text{CE}}[1:3]$	O	Chip Select for Banks 1 - 3
135	$\overline{\text{CS}}$	I	Reserved
137	PROCCLK	I/O	ST20 Clock or Reserved
127	$\overline{\text{RAS0/CE0}}$	O	DRAM RAS or Chip Select for Bank 0
134	DMAXFER	I	Reserved
138	$\overline{\text{PPC_MODE}}$	I	Reserved
123	$\overline{\text{OE}}$	I/O	Output Enable or Reserved

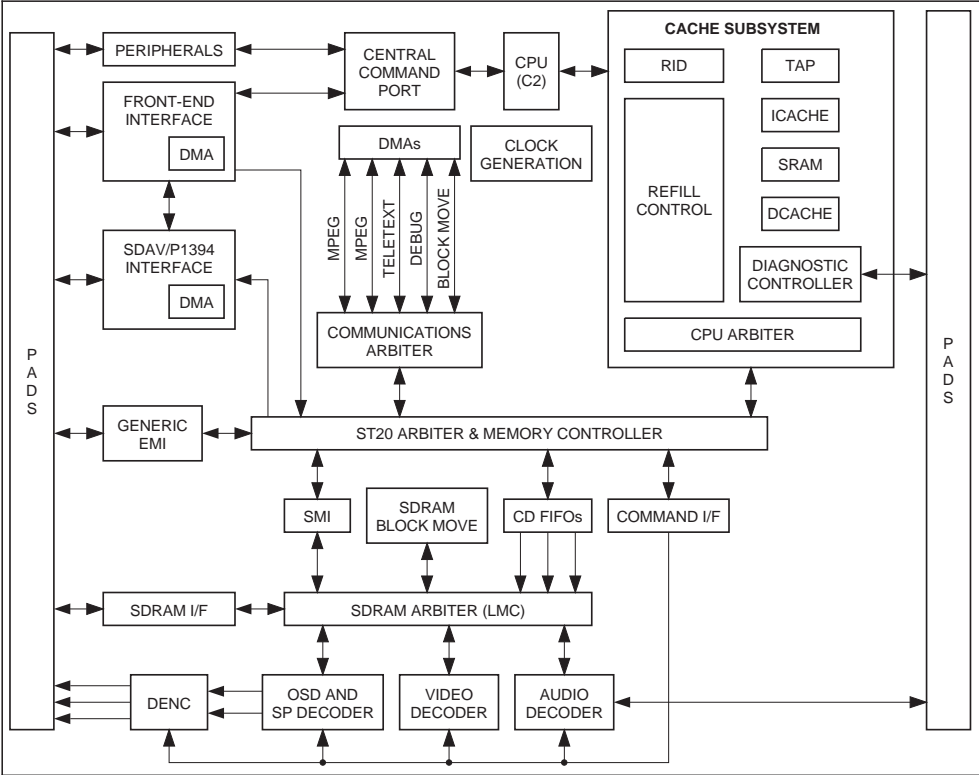
SDAV/P1394 INTERFACE

30	TEST1	I/O	DATA_RX/STROBE_TX (SDAV Mode) or SDAV_CLK (P1394 Mode) or PARA_DATA[6] (DVD//)
31	TEST2	I/O	STROBE_RX/DATA_TX (SDAV Mode) or DATA_IN/DATA_OUT (P1394 Mode) or PARA_DATA[7] (DVD//)
32	TEST3	I/O	Direction (SDAV Mode) or DATA_VALID In/Out (P1394 Mode)

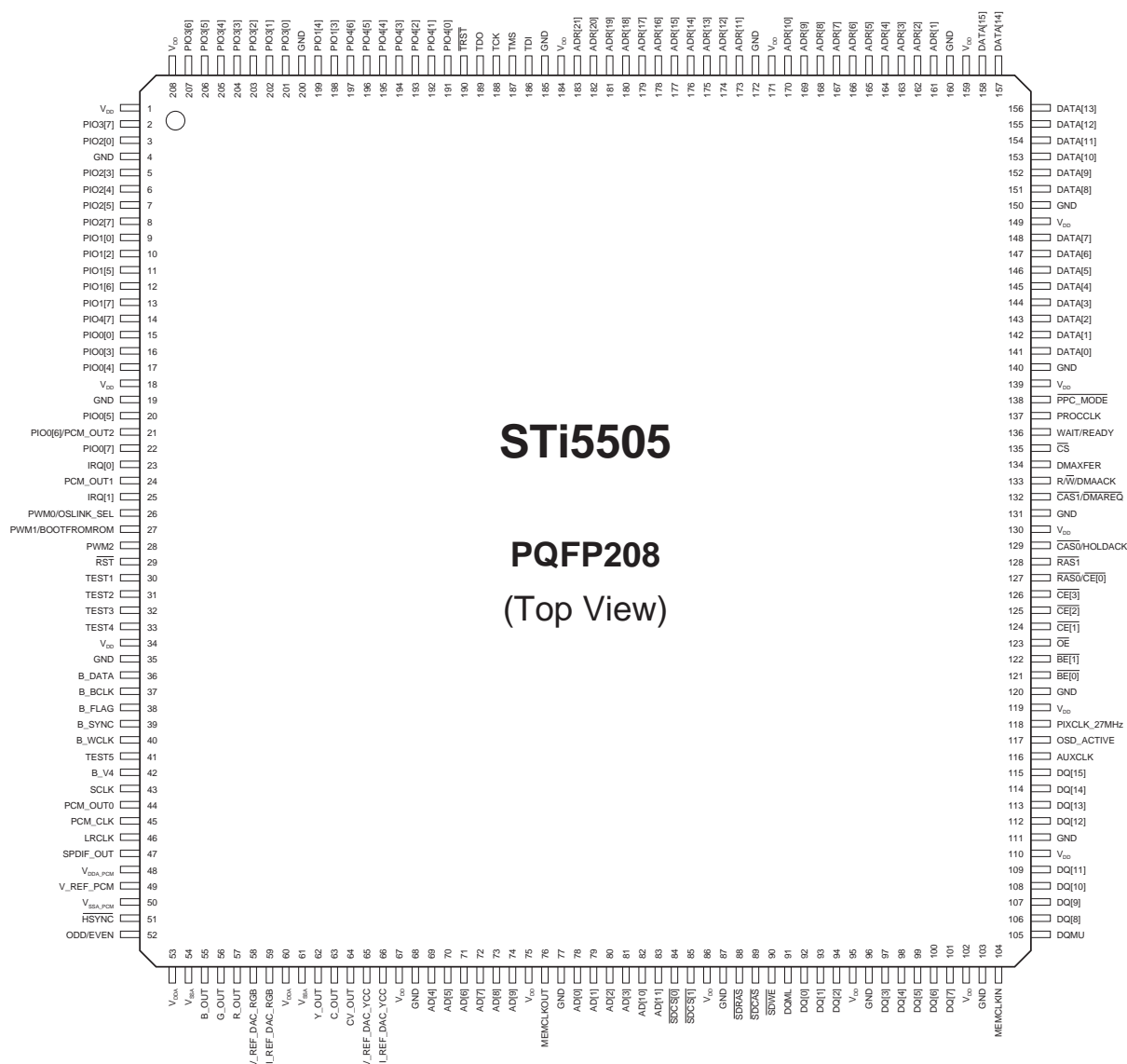
MISCELLANEOUS

41	TEST5	O	NRSS_OUT (DVB/DSS)
33	TEST4	I	PARA_DVALID (DVD//) : Data valid on front end parallel interface

● BLOCK DIAGRAM



● PIN CONNECTIONS



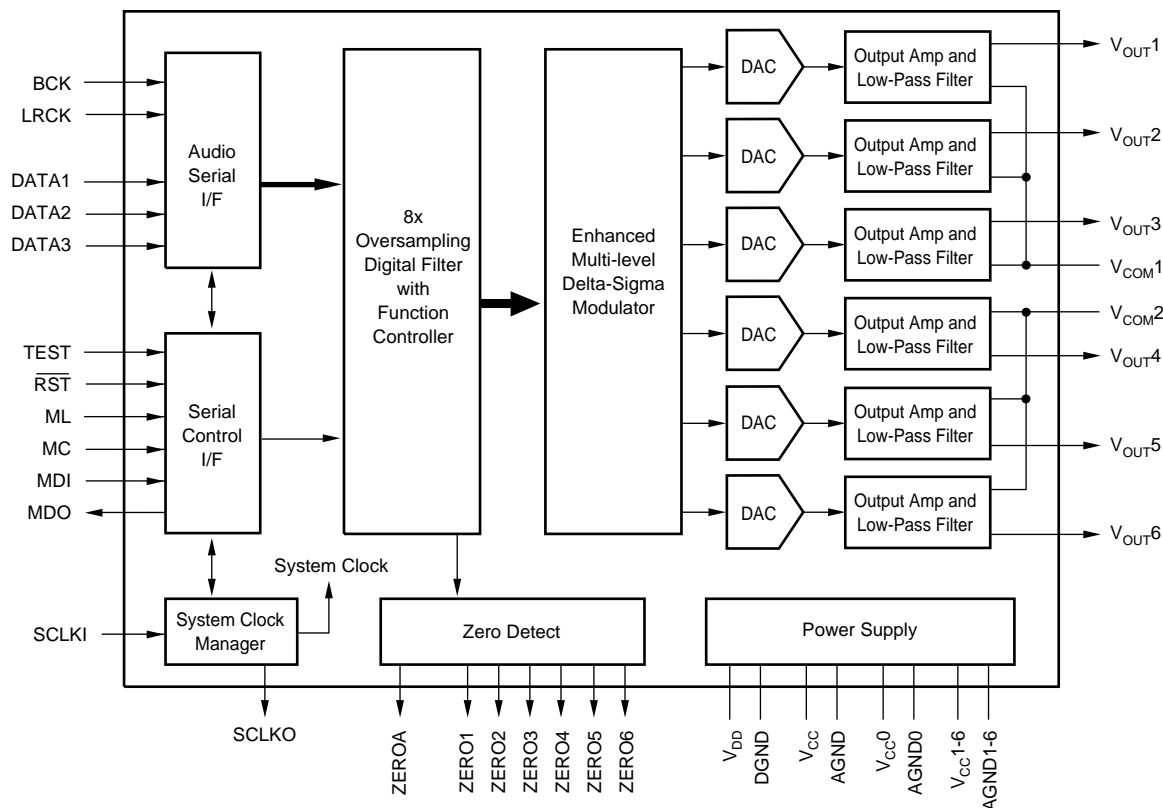
2. IC19 (PCM1600 6CH DAC)

● PIN DESCRIPTION

PIN	NAME	I/O	DESCRIPTION
1	ZERO1	O	Zero Data Flag for V_{OUT1} .
2	ZERO2	O	Zero Data Flag for V_{OUT2} .
3	ZERO3	O	Zero Data Flag for V_{OUT3} .
4	ZERO4	O	Zero Data Flag for V_{OUT4} .
5	ZERO5	O	Zero Data Flag for V_{OUT5} .
6	ZERO6	O	Zero Data Flag for V_{OUT6} .
7	AGND	—	Analog Ground
8	V_{CC}	—	Analog Power Supply, +5V
9	V_{OUT6}	O	Voltage Output of Audio Signal Corresponding to Rch on DATA3.
10	V_{OUT5}	O	Voltage Output of Audio Signal Corresponding to Lch on DATA3.
11	V_{OUT4}	O	Voltage Output of Audio Signal Corresponding to Rch on DATA2.
12	V_{OUT3}	O	Voltage Output of Audio Signal Corresponding to Lch on DATA2.
13	V_{OUT2}	O	Voltage Output of Audio Signal Corresponding to Rch on DATA1.
14	V_{OUT1}	O	Voltage Output of Audio Signal Corresponding to Lch on DATA1.
15	V_{COM2}	O	Common Voltage Output. This pin should be bypassed with a 10 μ F capacitor to AGND.
16	V_{COM2}	O	Common Voltage Output. This pin should be bypassed with a 10 μ F capacitor to AGND.
17	AGND6	—	Analog Ground
18	V_{CC6}	—	Analog Power Supply, +5V
19	AGND5	—	Analog Ground
20	V_{CC5}	—	Analog Power Supply, +5V
21	AGND4	—	Analog Ground
22	V_{CC4}	—	Analog Power Supply, +5V
23	AGND3	—	Analog Ground
24	V_{CC3}	—	Analog Power Supply, +5V
25	AGND2	—	Analog Ground
26	V_{CC2}	—	Analog Power Supply, +5V
27	AGND1	—	Analog Ground
28	V_{CC1}	—	Analog Power Supply, +5V
29	AGND0	—	Analog Ground
30	V_{CC0}	—	Analog Power Supply, +5V
31	NC	I	No Connection. Must be open.
32	NC	I	No Connection. Must be open.
33	MDO	O	Serial Data Output for Function Register Control Port ⁽³⁾
34	MDI	I	Serial Data Input for Function Register Control Port ⁽¹⁾
35	MC	IN	Shift Clock for Function Register Control Port ⁽¹⁾
36	ML	IN	Latch Enable for Function Register Control Port ⁽¹⁾
37	\overline{RST}	I	System Reset, Active LOW ⁽¹⁾
38	SCLKI	I	System Clock In. Input frequency is 256, 384, 512 or 768f _S . ⁽²⁾
39	SCLKO	O	Buffered Clock Output. Output frequency is 256, 384, 512, or 768f _S and one-half of 256, 384, 512, or 768f _S .
40	BCK	IN	Shift Clock Input for Serial Audio Data ⁽²⁾
41	LRCK	IN	Left and Right Clock Input. This clock is equal to the sampling rate, f _S . ⁽²⁾
42	TEST	—	Test Pin. This pin should be connected to DGND. ⁽¹⁾
43	V_{DD}	—	Digital Power Supply, +3.3V
44	DGND	—	Digital Ground for +3.3V
45	DATA1	IN	Serial Audio Data Input for V_{OUT1} and V_{OUT2} ⁽²⁾
46	DATA2	IN	Serial Audio Data Input for V_{OUT3} and V_{OUT4} ⁽²⁾
47	DATA3	IN	Serial Audio Data Input for V_{OUT5} and V_{OUT6} ⁽²⁾
48	DATA1	IN	Serial Audio Data Input for V_{OUT1} and V_{OUT2}

NOTES: (1) Schmitt-Trigger input with internal pull-down, 5V tolerant. (2) Schmitt-Trigger input, 5V tolerant. (3) Tri-state output.

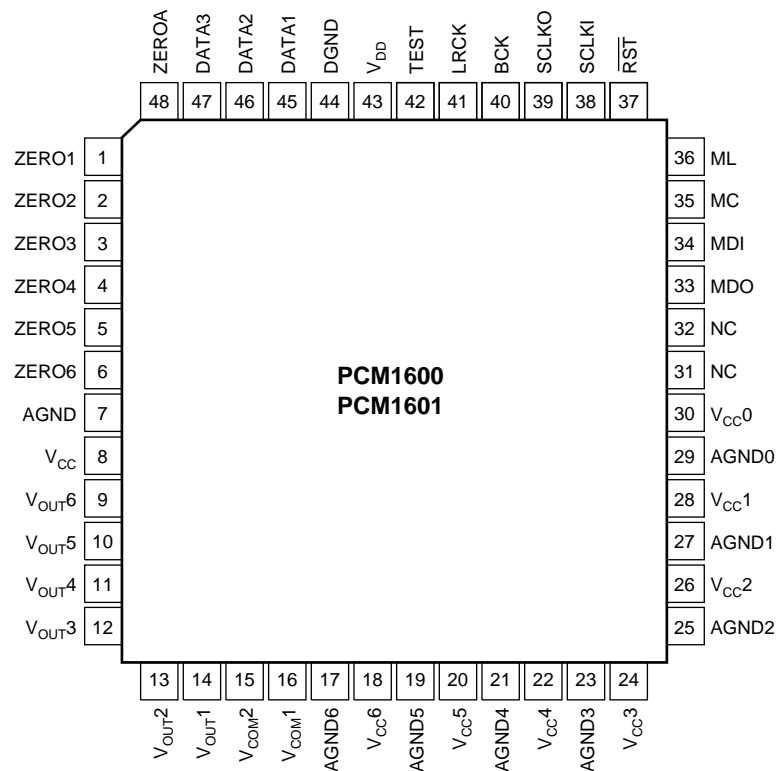
● BLOCK DIAGRAM



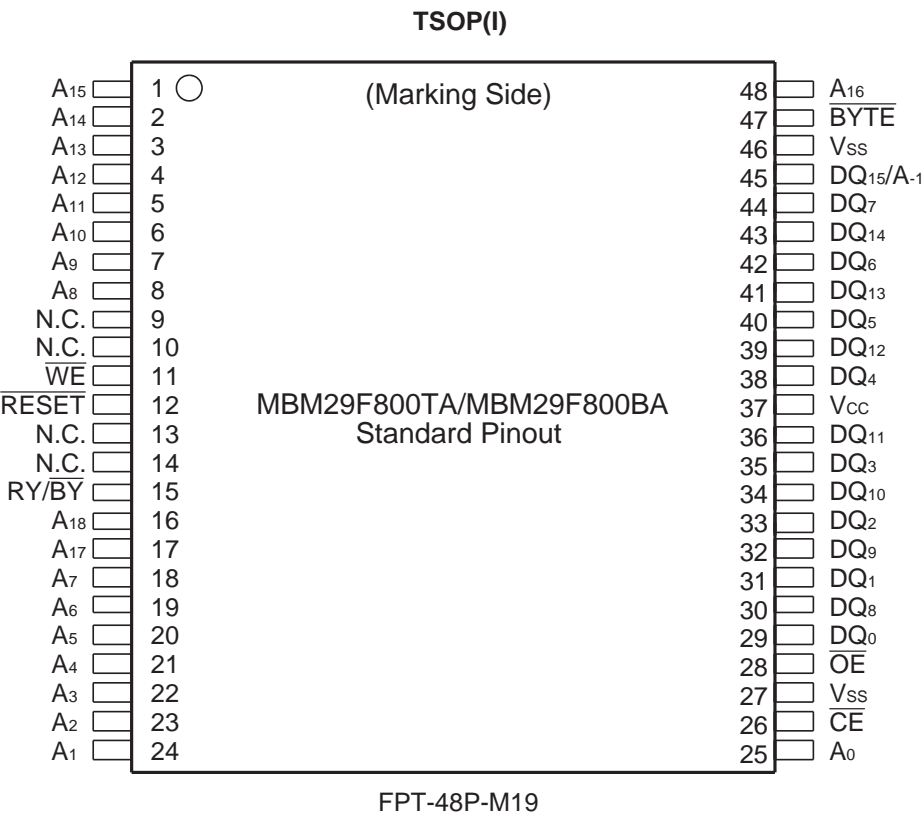
● PIN CONNECTIONS

Top View

LQFP, MQFP



● PIN CONNECTIONS

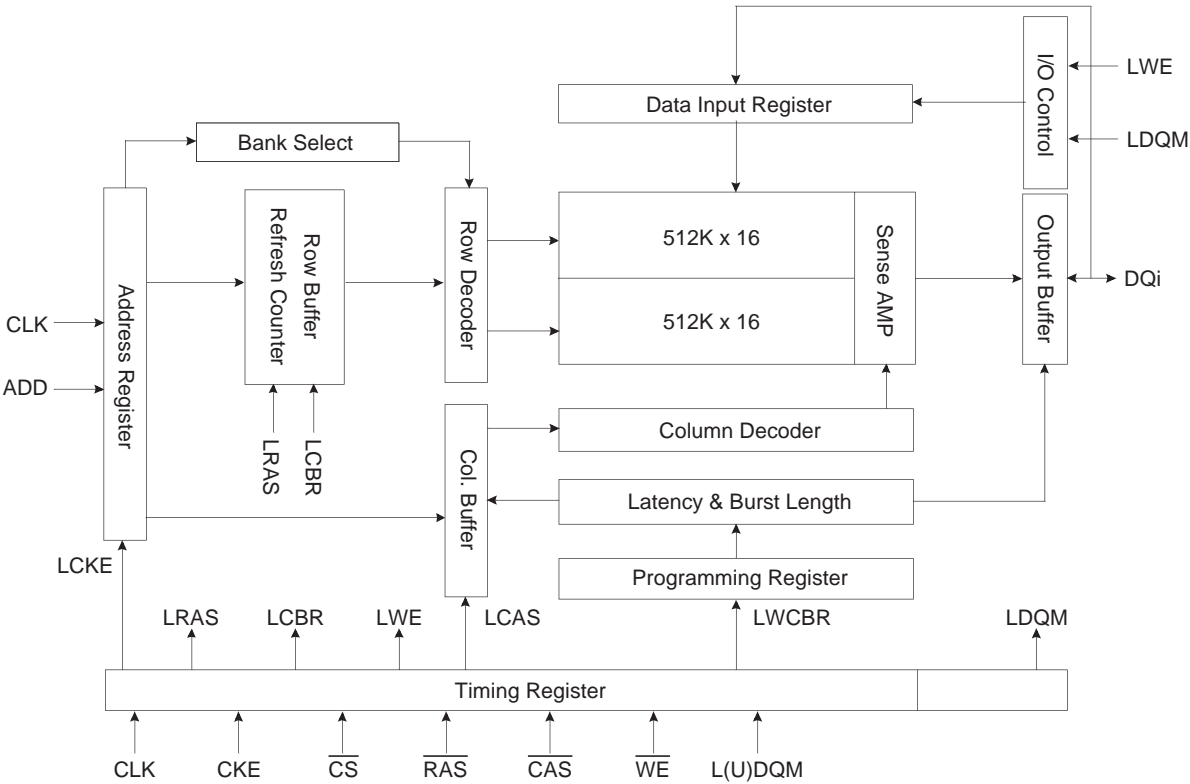


4. IC22, IC23 (KM416S1120D 16M SDRAM)

● PIN DESCRIPTION

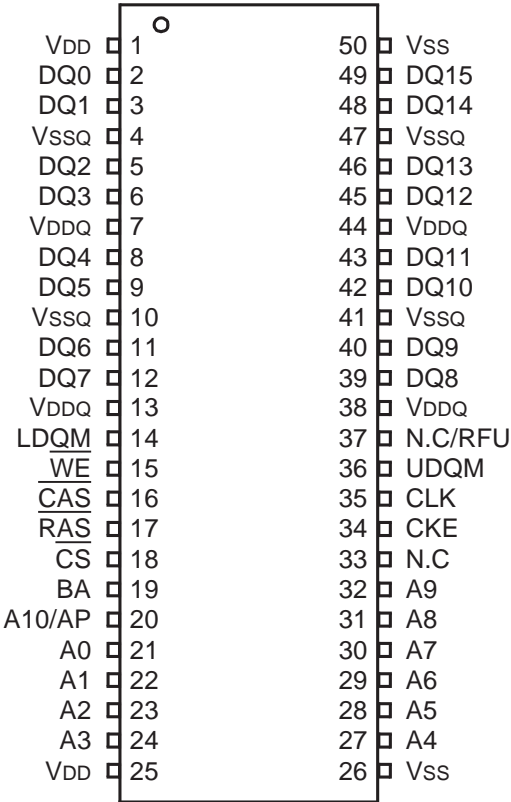
Pin	Name	Input Function
CLK	<i>System Clock</i>	Active on the positive going edge to sample all inputs.
$\overline{\text{CS}}$	<i>Chip Select</i>	Disables or enables device operation by masking or enabling all inputs except CLK, CKE and L(U)DQM
CKE	<i>Clock Enable</i>	Masks system clock to freeze operation from the next clock cycle. CKE should be enabled at least one cycle prior to new command. Disable input buffers for power down in standby.
A ₀ ~ A ₁₀ /AP	<i>Address</i>	Row / column addresses are multiplexed on the same pins. Row address : RA ₀ ~ RA ₁₀ , column address : CA ₀ ~ CA ₇
BA	<i>Bank Select Address</i>	Selects bank to be activated during row address latch time. Selects bank for read/write during column address latch time.
$\overline{\text{RAS}}$	<i>Row Address Strobe</i>	Latches row addresses on the positive going edge of the CLK with $\overline{\text{RAS}}$ low. Enables row access & precharge.
$\overline{\text{CAS}}$	<i>Column Address Strobe</i>	Latches column addresses on the positive going edge of the CLK with $\overline{\text{CAS}}$ low. Enables column access.
$\overline{\text{WE}}$	<i>Write Enable</i>	Enables write operation and row precharge. Latches data in starting from CAS, WE active.
L(U)DQM	<i>Data Input/Output Mask</i>	Makes data output Hi-Z, tSHZ after the clock and masks the output. Blocks data input when L(U)DQM active.
DQ ₀ ~ 15	<i>Data Input/Output</i>	Data inputs/outputs are multiplexed on the same pins.
VDD/VSS	<i>Power Supply/Ground</i>	Power and ground for the input buffers and the core logic.
VDDQ/VSSQ	<i>Data Output Power/Ground</i>	Isolated power supply and ground for the output buffers to provide improved noise immunity.
N.C/RFU	<i>No Connection/ Reserved for Future Use</i>	This pin is recommended to be left No Connection on the device.

● BLOCK DIAGRAM



* Samsung Electronics reserves the right to change products or specification without notice.

● PIN CONNECTIONS



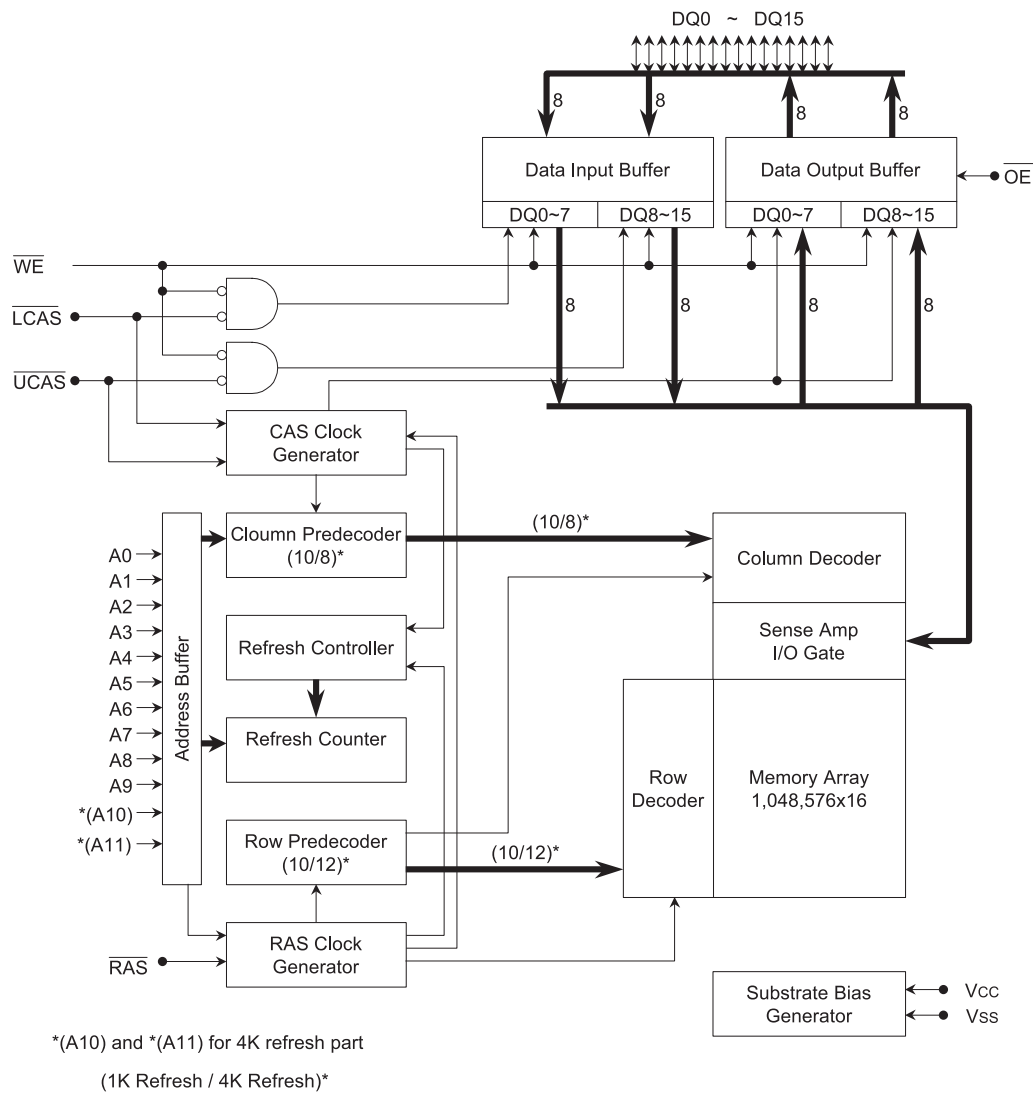
50PIN TSOP (II)
(400mil x 825mil)
(0.8 mm PIN PITCH)

5. IC27 (HY5118164B 16M EDO DRAM)

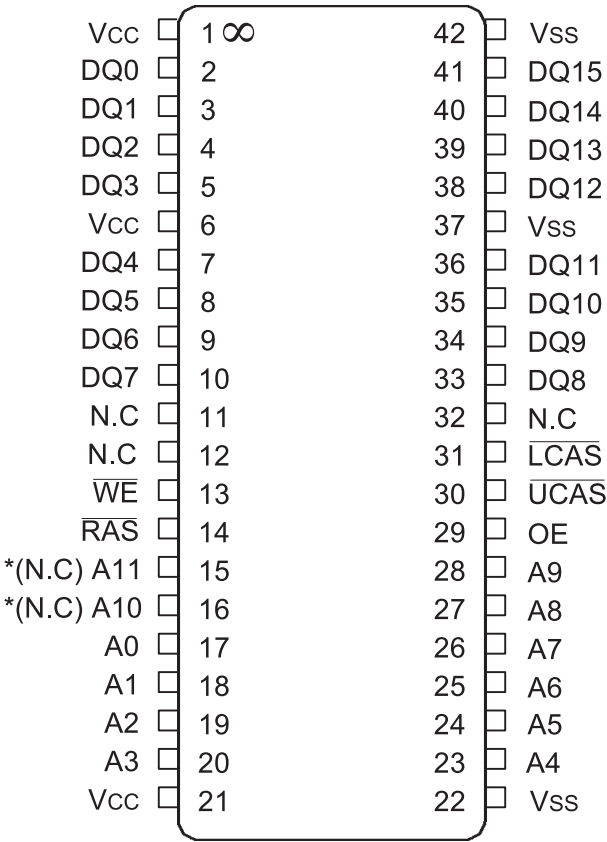
● PIN DESCRIPTION

Pin Name	Parameter
/RAS	Row Address Strobe
/CAS	Column Address Strobe
/WE	Write Enable
/OE	Output Enable
A0~A11	Address Input (4K Refresh Product)
A0~A9	Address Input (1K Refresh Product)
DQ0~DQ15	Data In/Out
Vcc	Power (5V)
Vss	Ground
NC	No Connection

● BLOCK DIAGRAM



● PIN CONNECTIONS



42Pin Plastic SOJ (400mil)

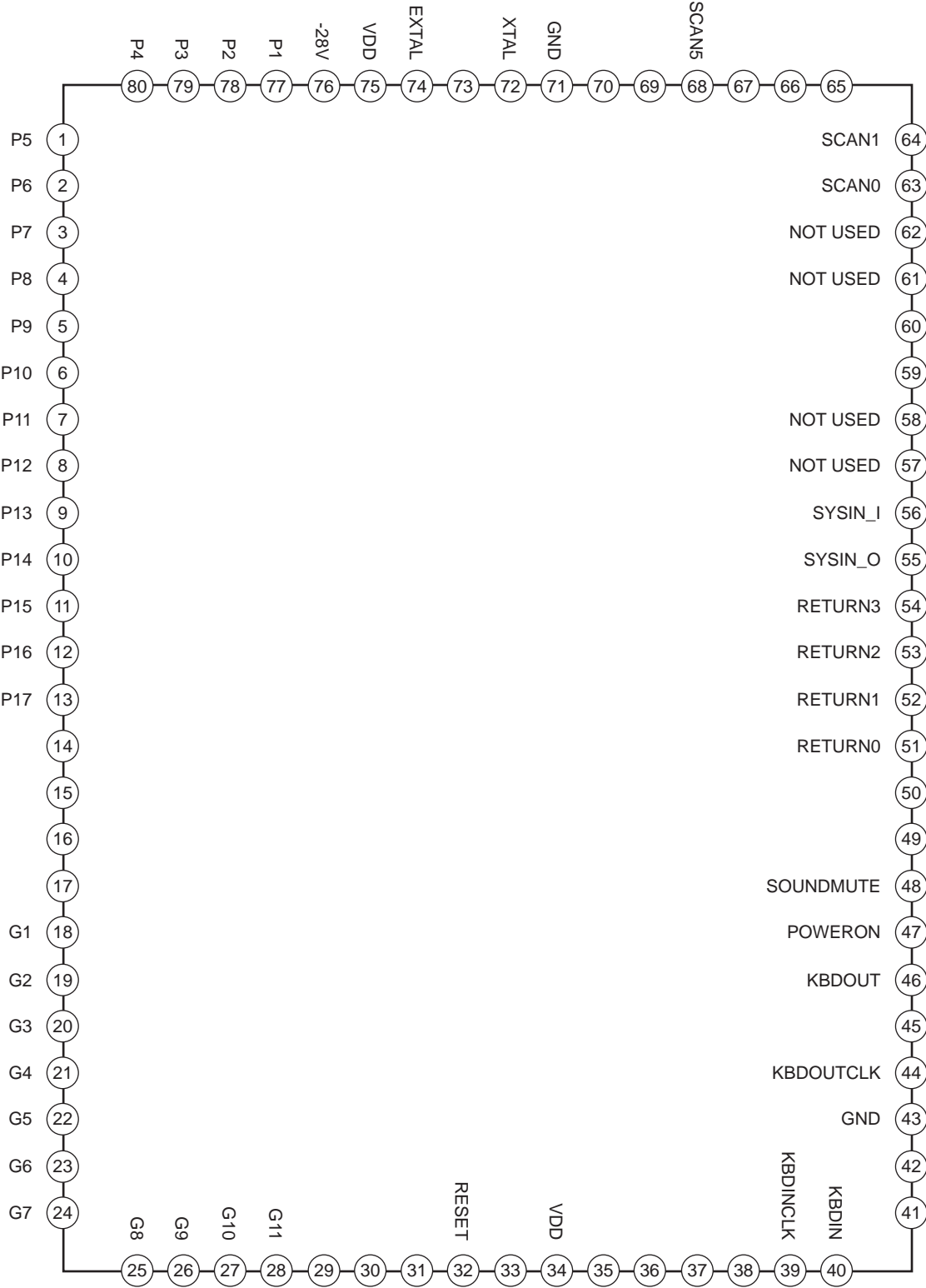
*(N.C) : For 1K refresh product

5. IC91 (CXP50112 FRONT u-COM)

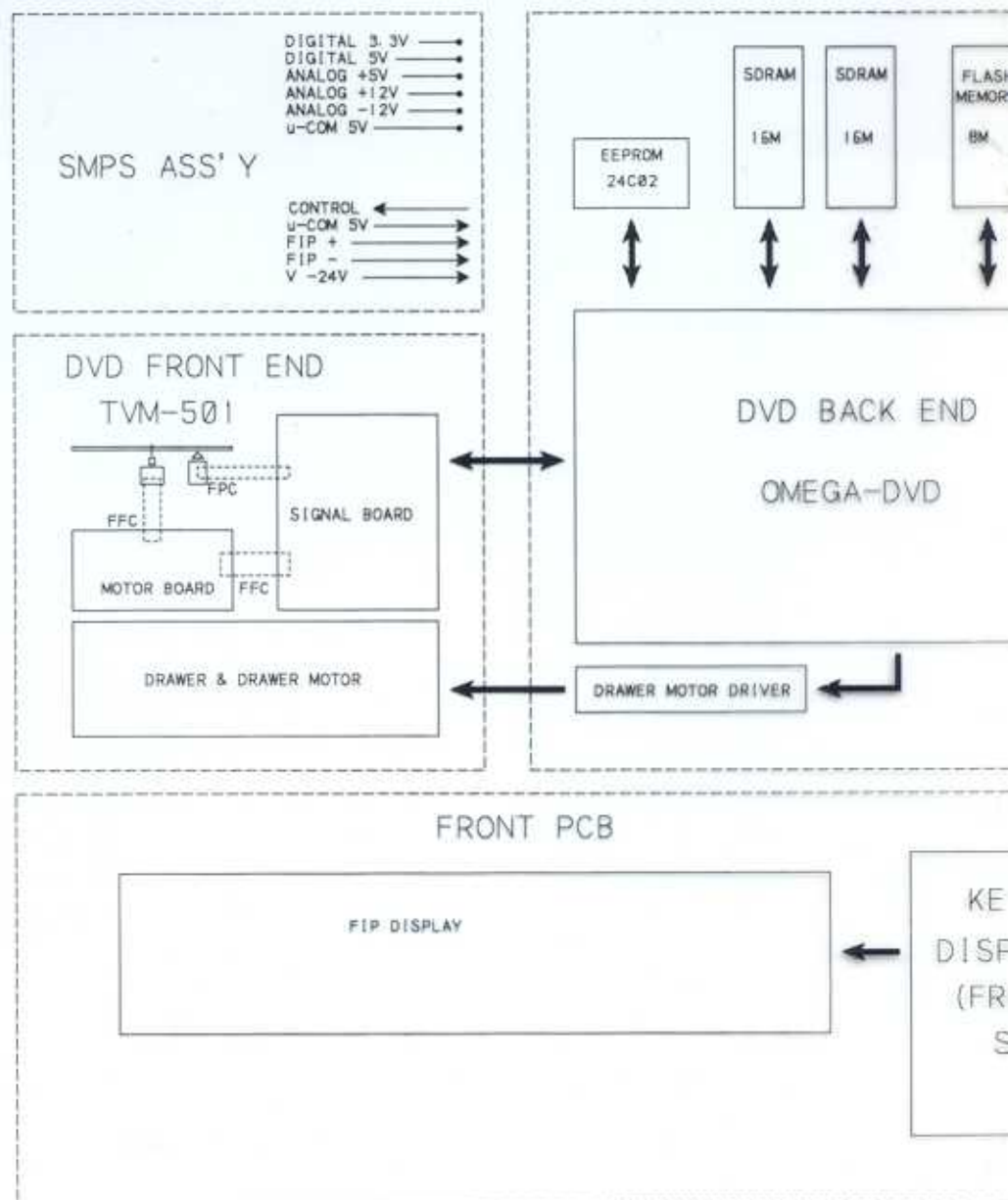
● PIN DESCRIPTION

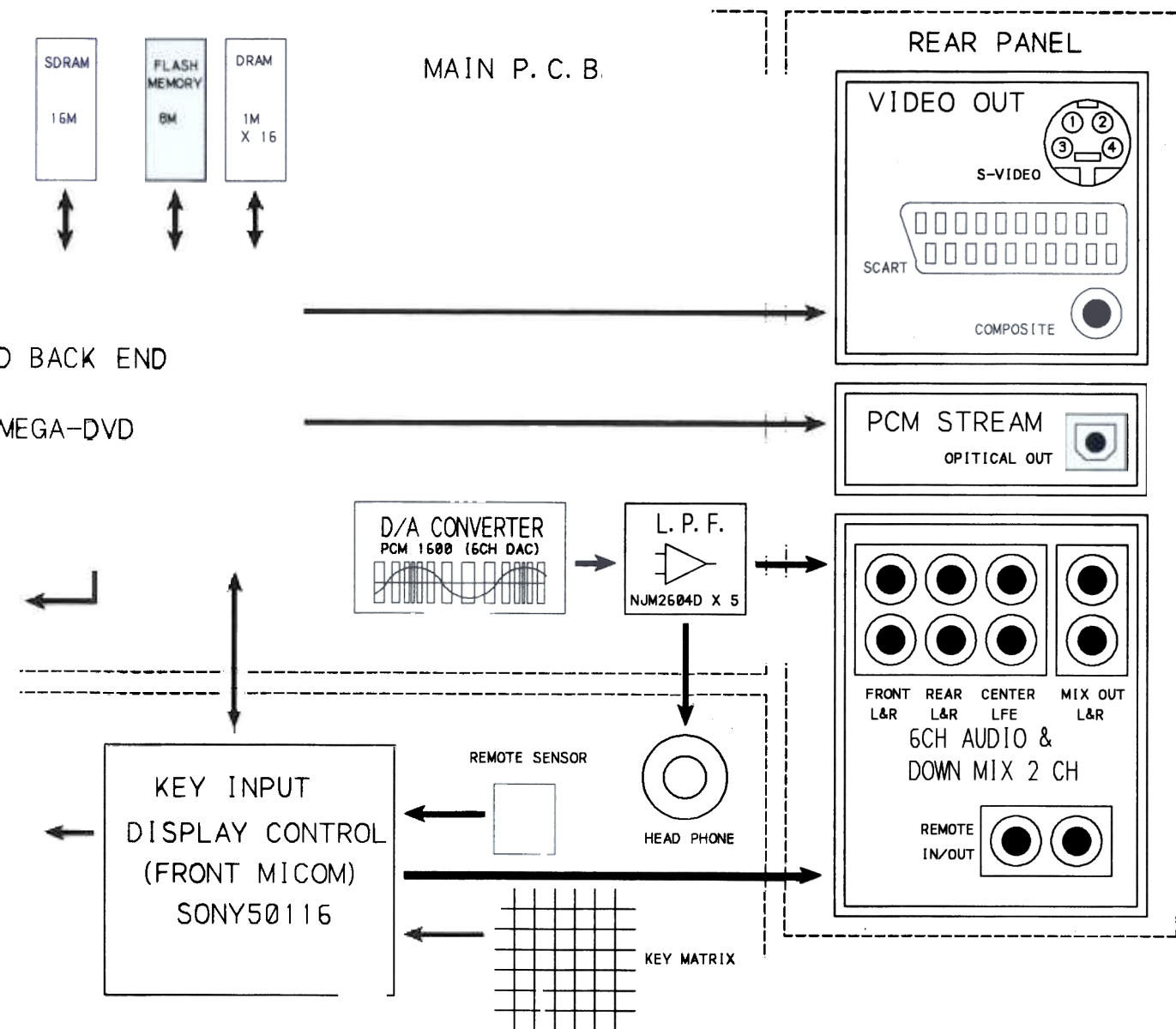
PIN NO.	DESCRIPTION	REMARK	PIN NO.	DESCRIPTION	REMARK
1	P5	FIP	41	N.C	NO CONNECTION
2	P6		42	N.C	
3	P7		43	GND	FROM MAIN PCB
4	P8		44	KBDOUTCLK	
5	P9		45	N.C	NO CONNECTION
6	P10		46	KBDOUT	FROM MAIN PCB
7	P11		47	POWERON	TO MAIN PCB
8	P12		48	SOUNDMUTE	
9	P13		49	N.C	NO CONNECTION
10	P14		50	N.C	
11	P15		51	RETURN0	KEY SCAN RETURN
12	P16		52	RETURN1	
13	P17		53	RETURN2	
14	N.C	NO CONNECTION	54	RETURN3	SYSTEM REMOCON
15	N.C		55	SYSID_O	
16	N.C		56	SYSID_I	
17	N.C		57	NOT USED	NO CONNECTION
18	G1	FIP	58	NOT USED	
19	G2		59	N.C	
20	G3		60	N.C	KEY SCAN
21	G4		61	NOT USED	
22	G5		62	NOT USED	NO CONNECTION
23	G6		63	SCAN0	
24	G7		64	SCAN1	
25	G8		65	N.C	
26	G9		66	N.C	KEY SCAN
27	G10		67	N.C	
28	G11	NO CONNECTION	68	SCAN5	NO CONNECTION
29	N.C		69	N.C	
30	N.C		70	N.C	
31	N.C	NO CONNECTION	71	GND	FIP
32	RESET		72	XTAL	
33	N.C		73	N.C	
34	VDD	5 V	74	EXTAL	5 V
35	N.C	NO CONNECTION	75	VDD	
36	N.C		76	VP (-28V)	FIP
37	N.C		77	P1	
38	N.C		78	P2	
39	KBDINCLK	TO MAIN PCB	79	P3	
40	KBDIN		80	P4	

● PIN CONNECTIONS

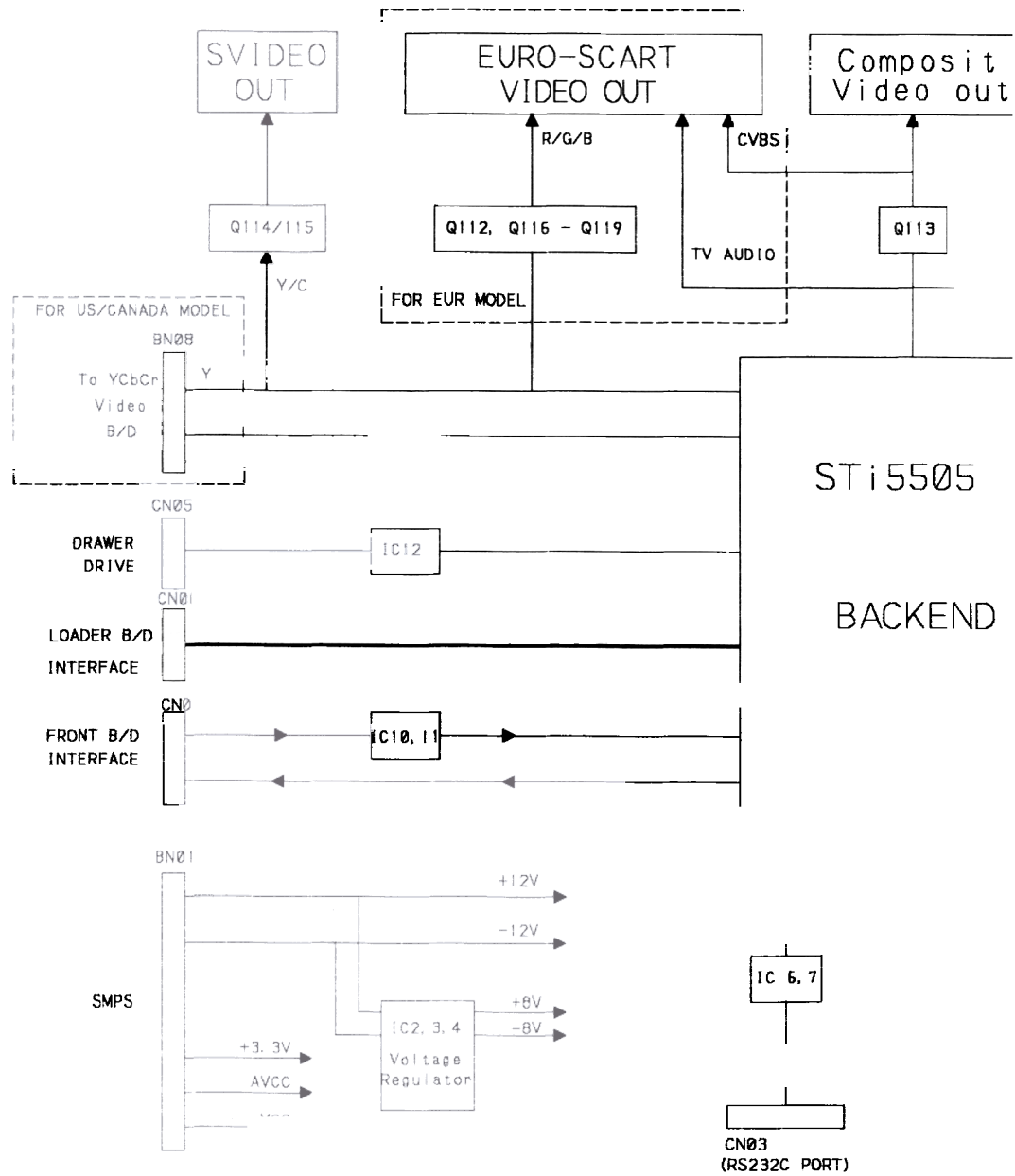


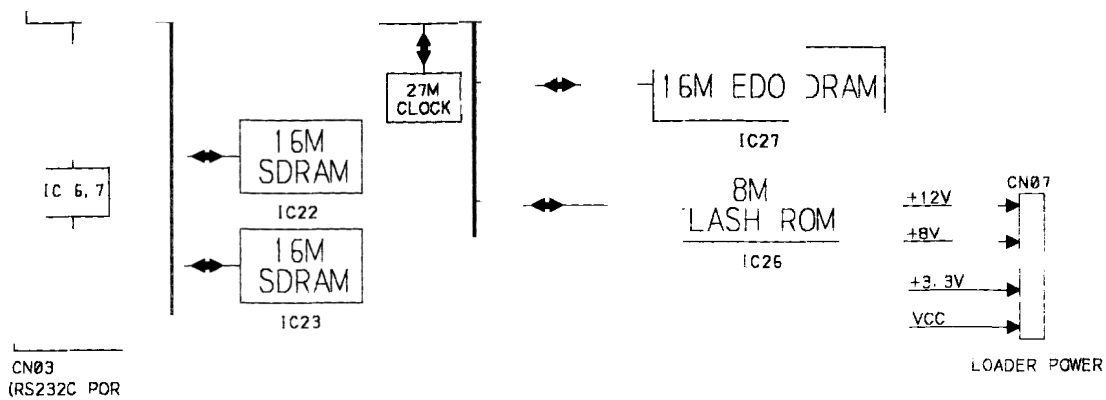
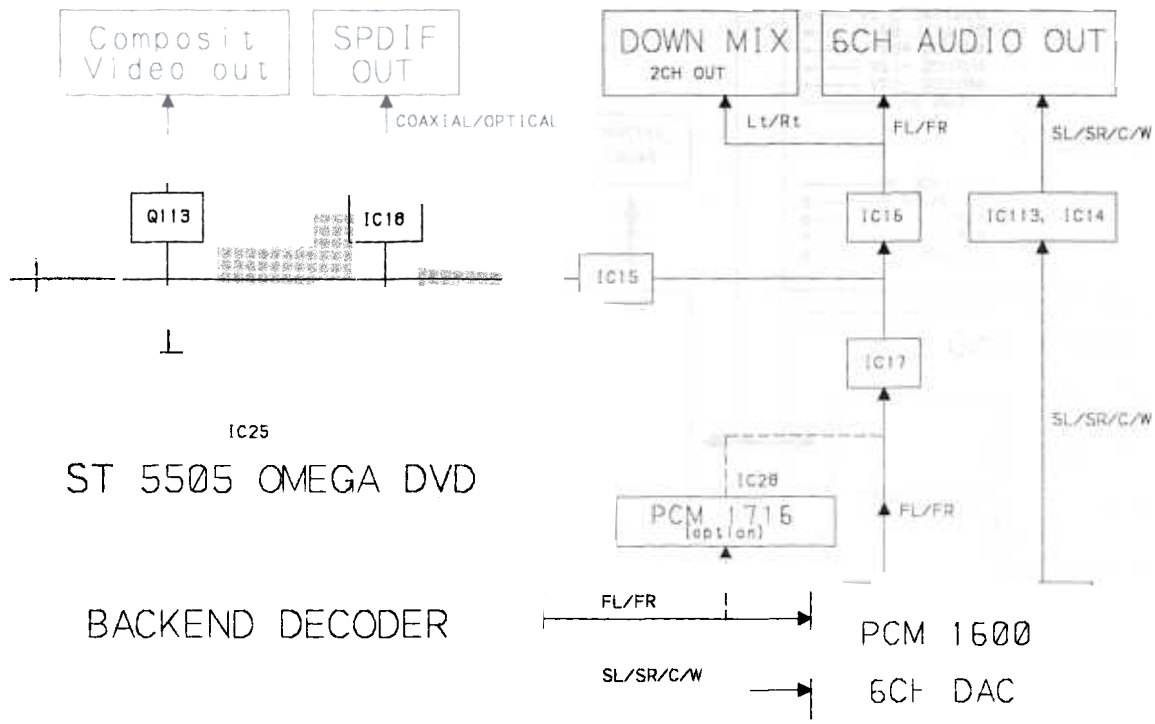
1. OVERAL BLOCK DIAGRAM





2. MAIN BOARD BLOCK DIAGRAM

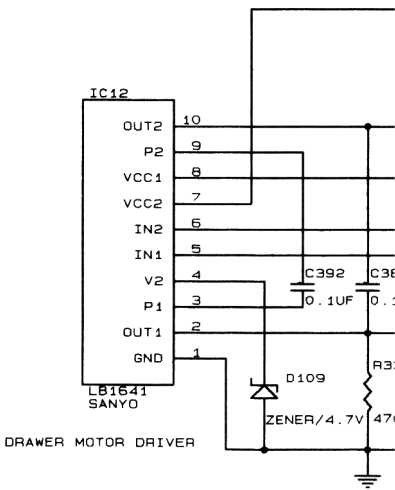
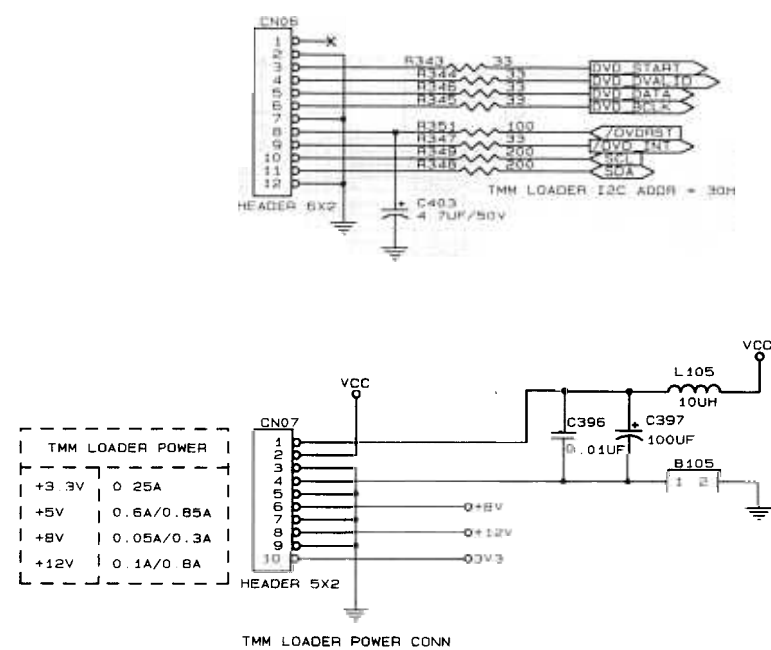




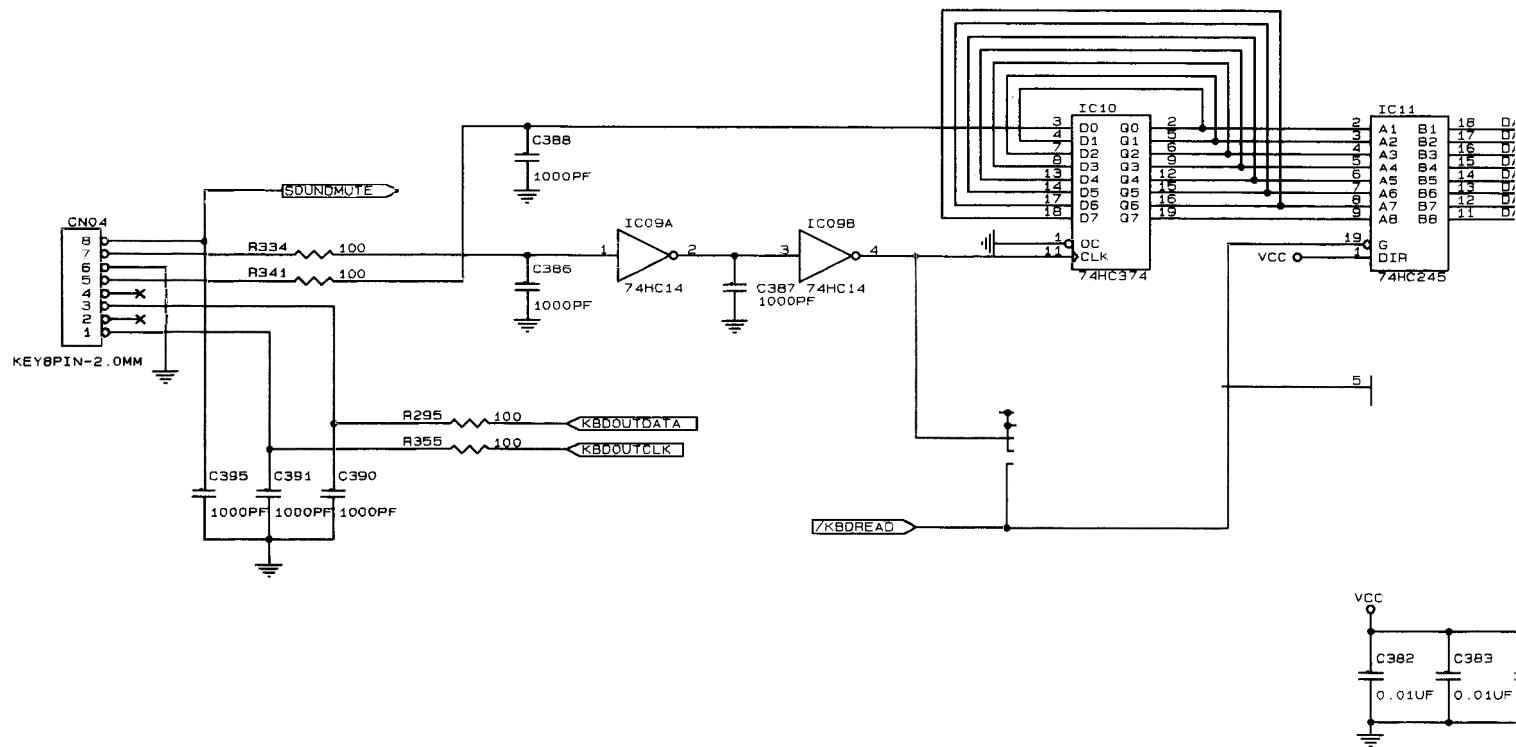
3. CIRCUIT DIAGRAM

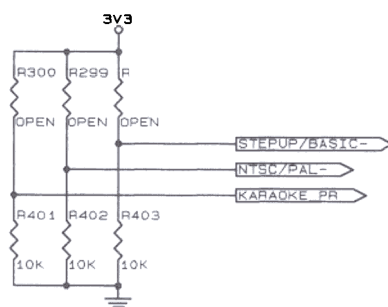
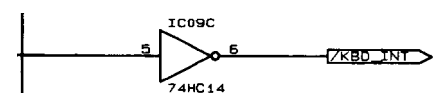
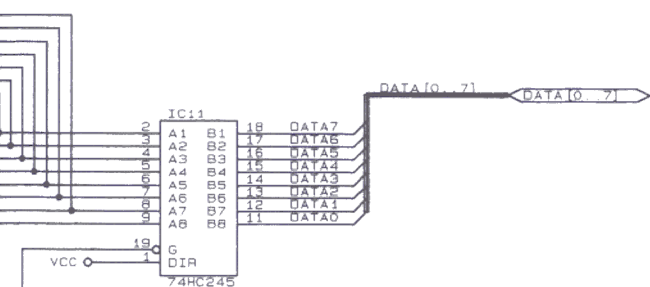
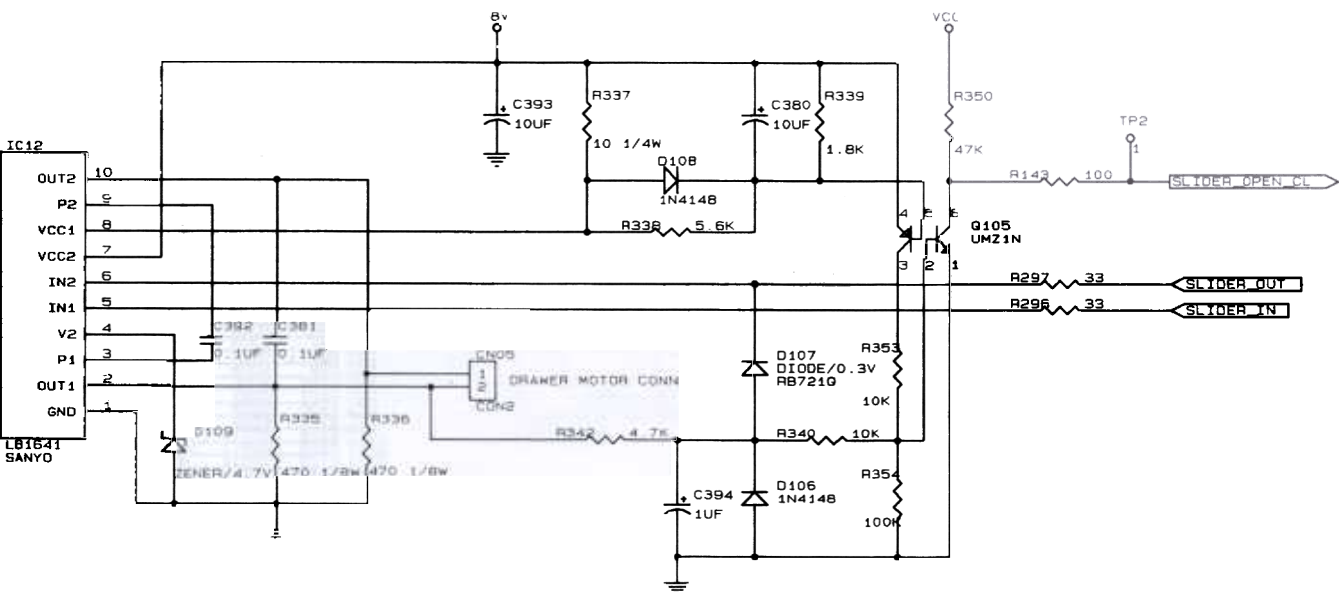
TMM LOADER & DISPLAY B/D I/F

TMM LOADER I/F

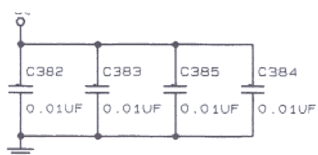


DISPLAY B/D

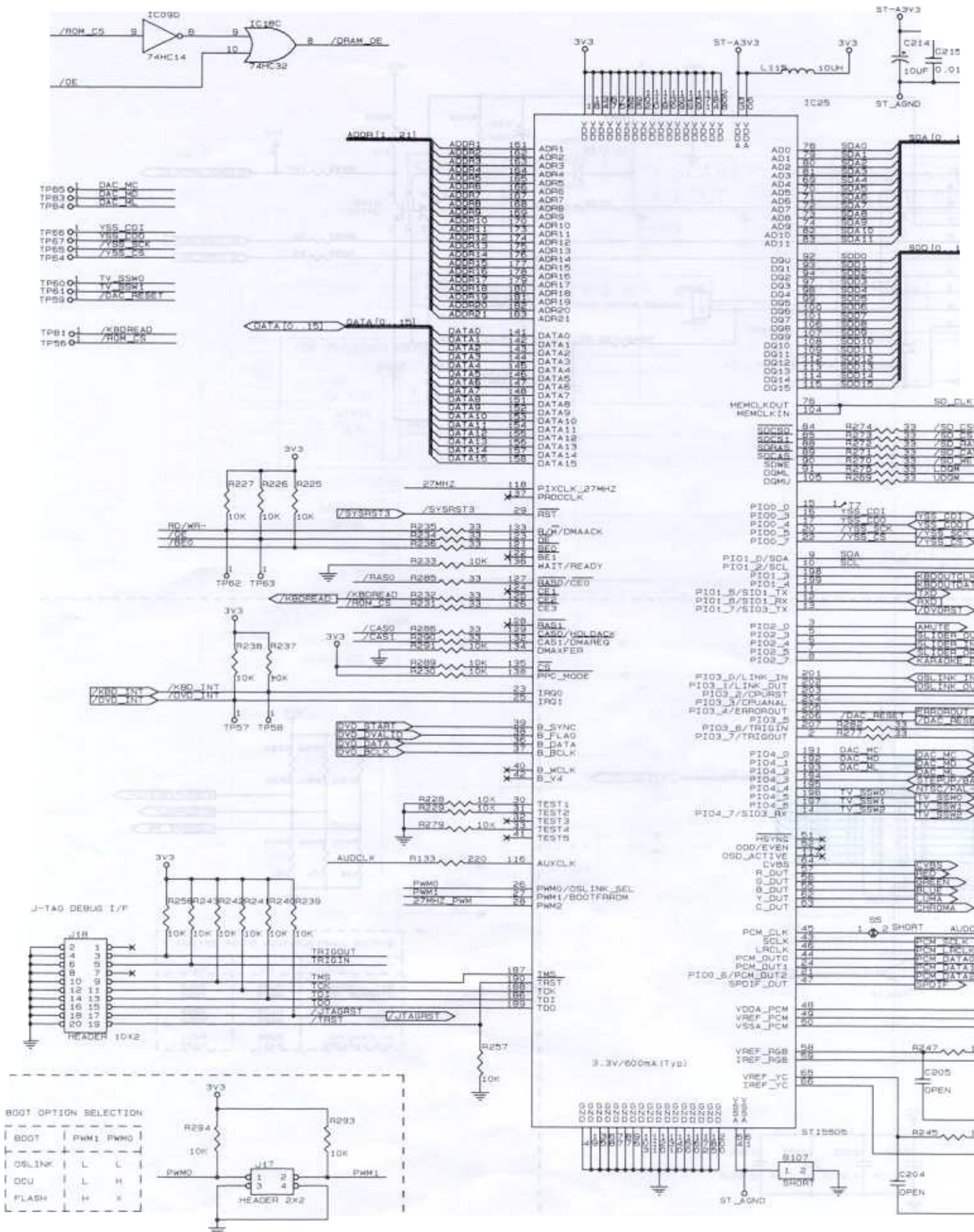




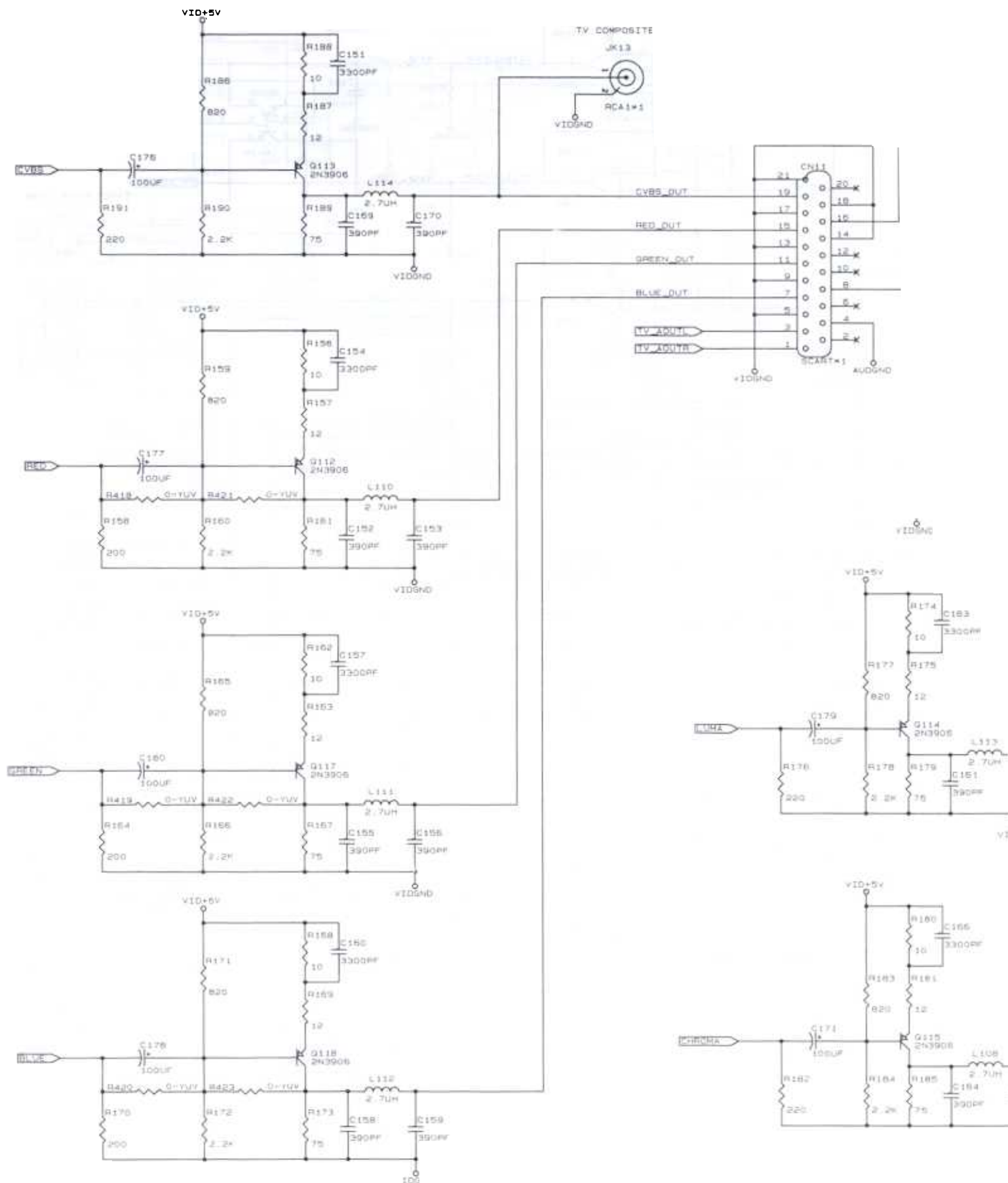
SYSTEM CONFIGURATION STRAP OPTION		
	IN	OUT
BASIC MODEL	R298	R403
STEP-UP MODEL	R403	R298
PAL	R402	R299
NTSC	R299	R402
W/ KARAOKE	R300	R401
W/O KARAOKE	R401	R300



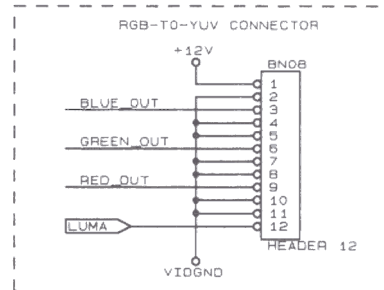
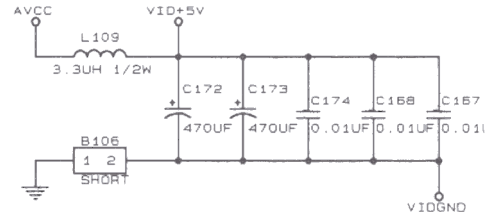
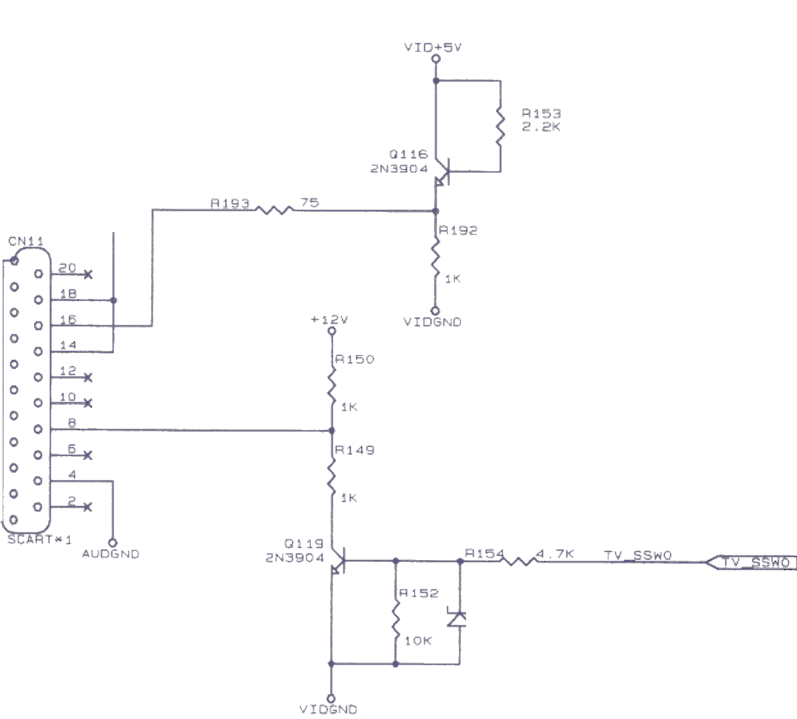
STi5505, SDRAM & FLASH ROM



VIDEO OUTPUT & SCART

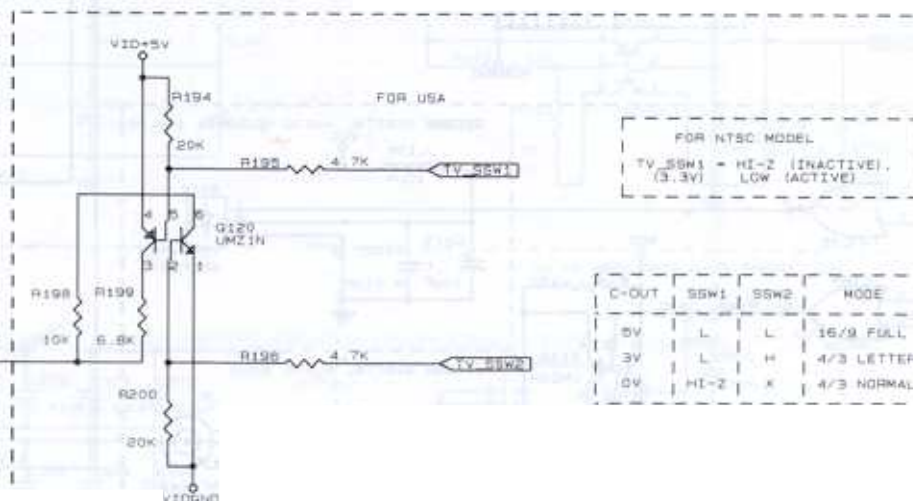
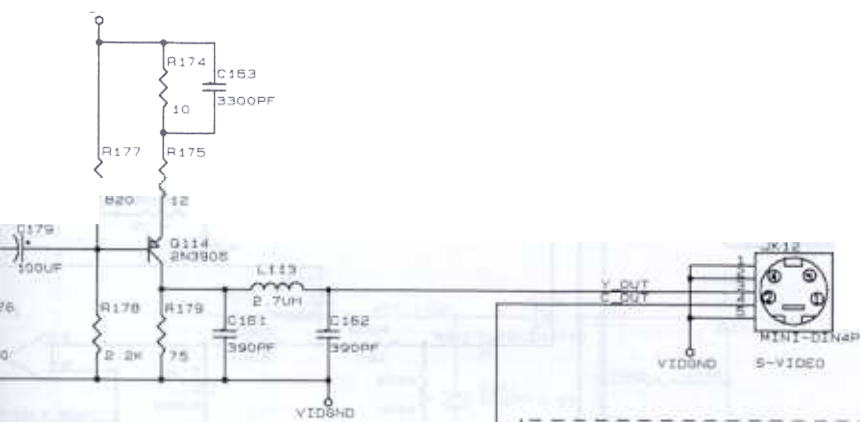


** R418-R423 (6EA) SHOULD BE INSTALLED W/ O ONLY WHEN YPbPr VIDEO OUTPUT IS NEEDED, OTHERWISE THOSE SHOULD BE UNINSTALLED



SSW	SSWO	MODE
12V	L	4/3 NORMAL
6V	H	16/9 FULL

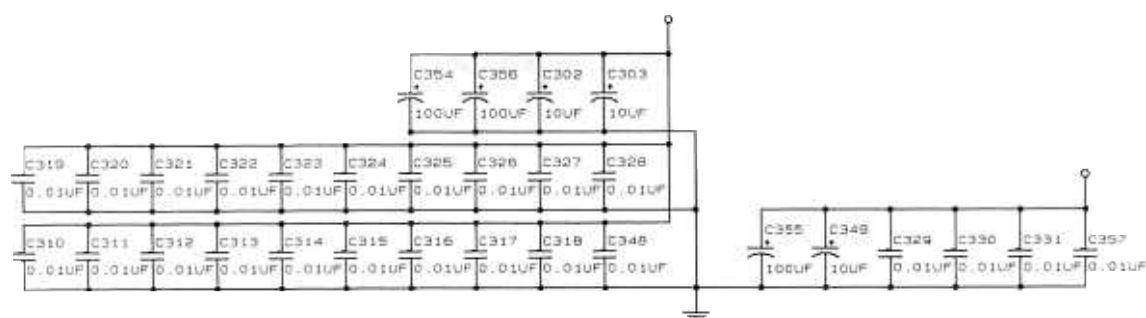
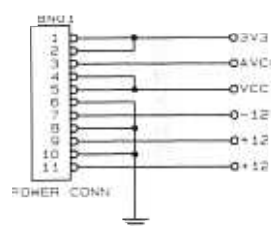
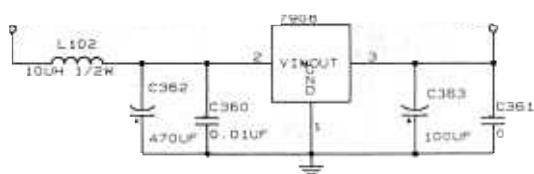
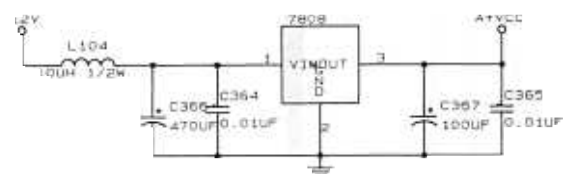
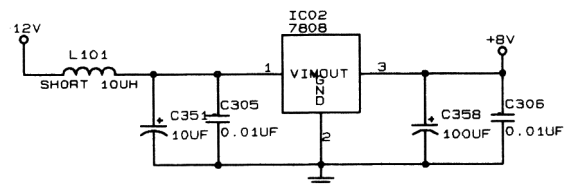
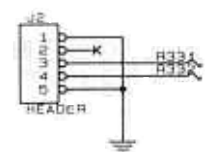
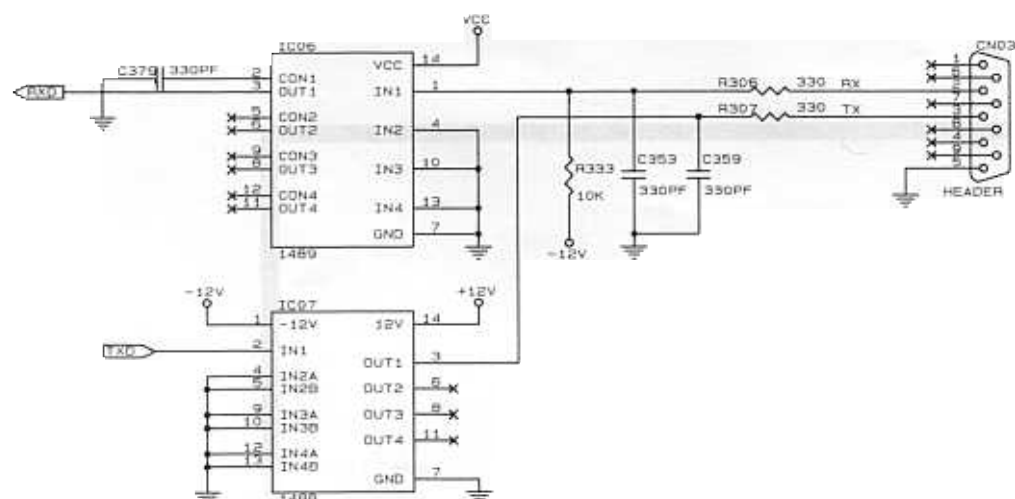
VIDGND



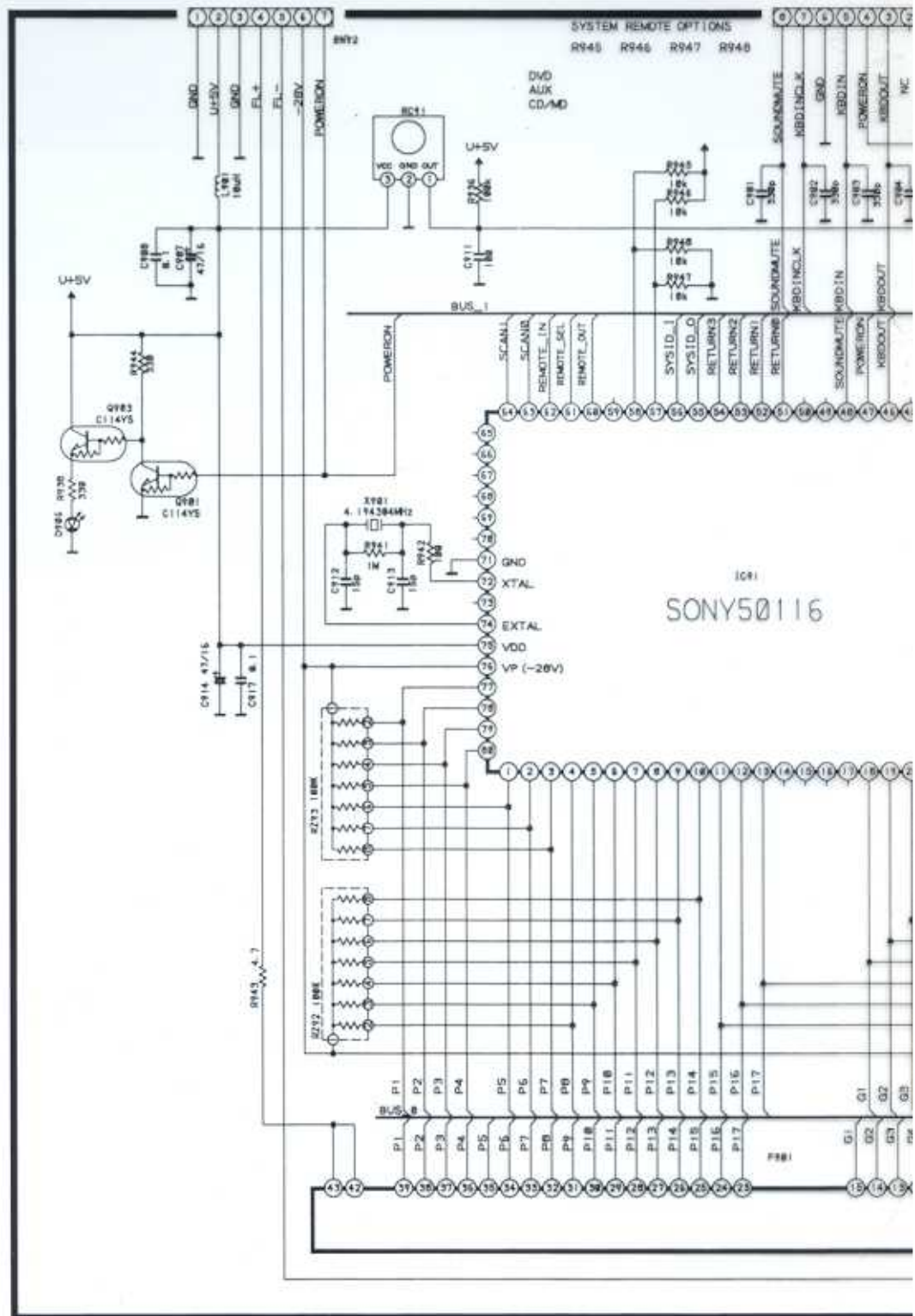
FOR NTSC MODEL
TV_SSW1 = HI-Z (INACTIVE),
(3.3V) LOW (ACTIVE)

C-OUT	SSW1	SSW2	MODE
0V	L	L	16/9 FULL
3V	L	H	4/3 LETTER BOX
0V	HI-Z	X	4/3 NORMAL

POWER & MISC

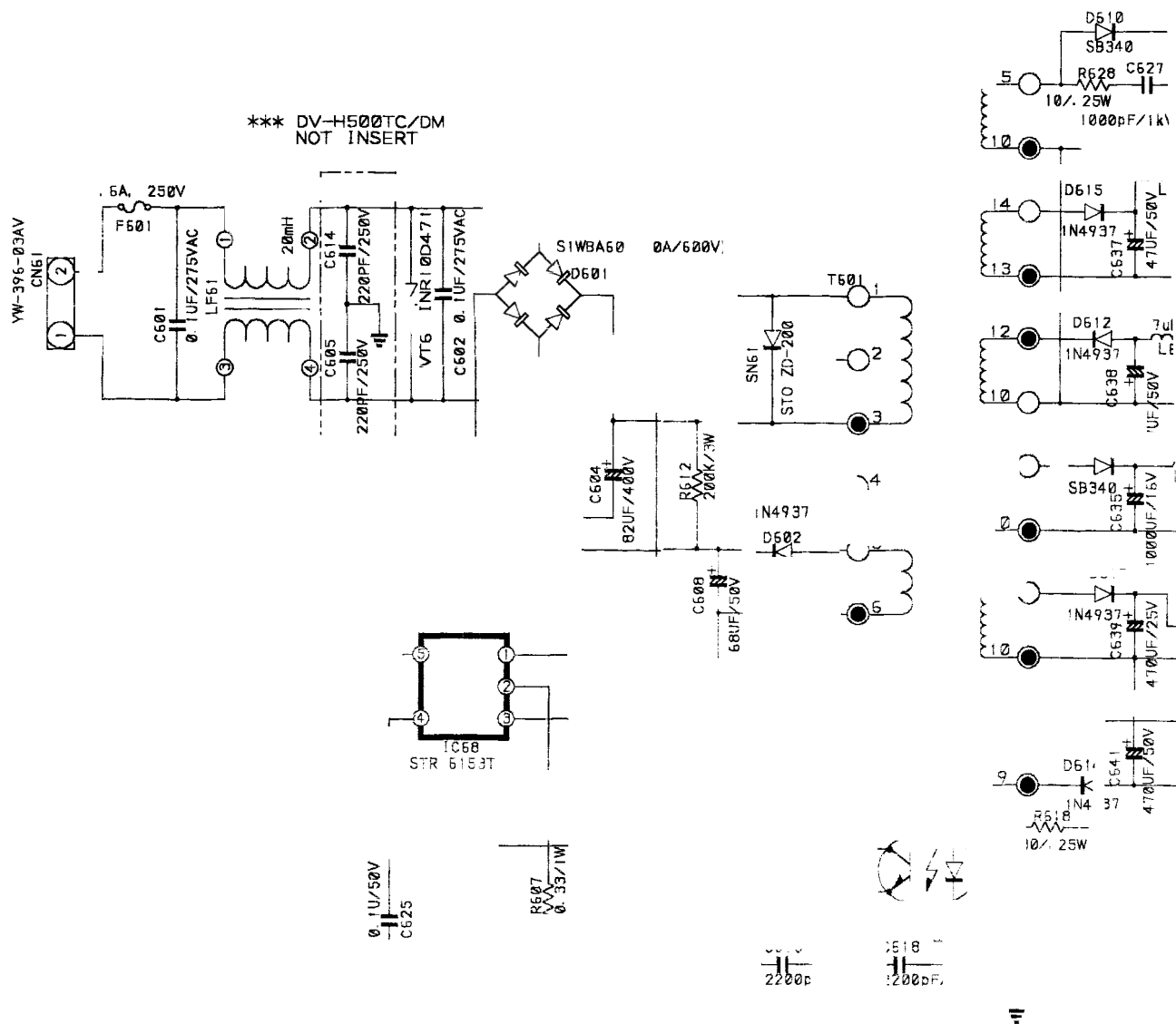


FRONT

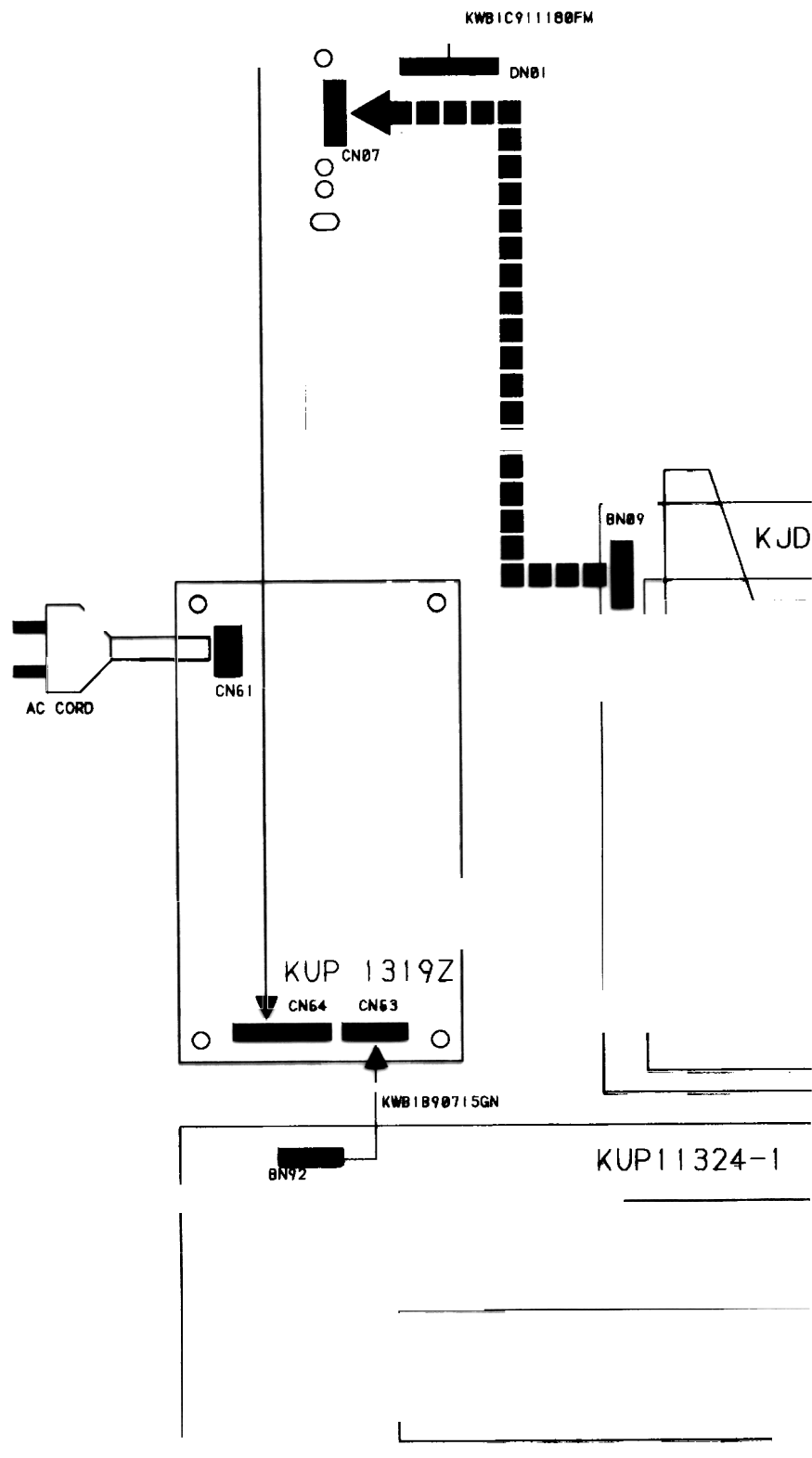


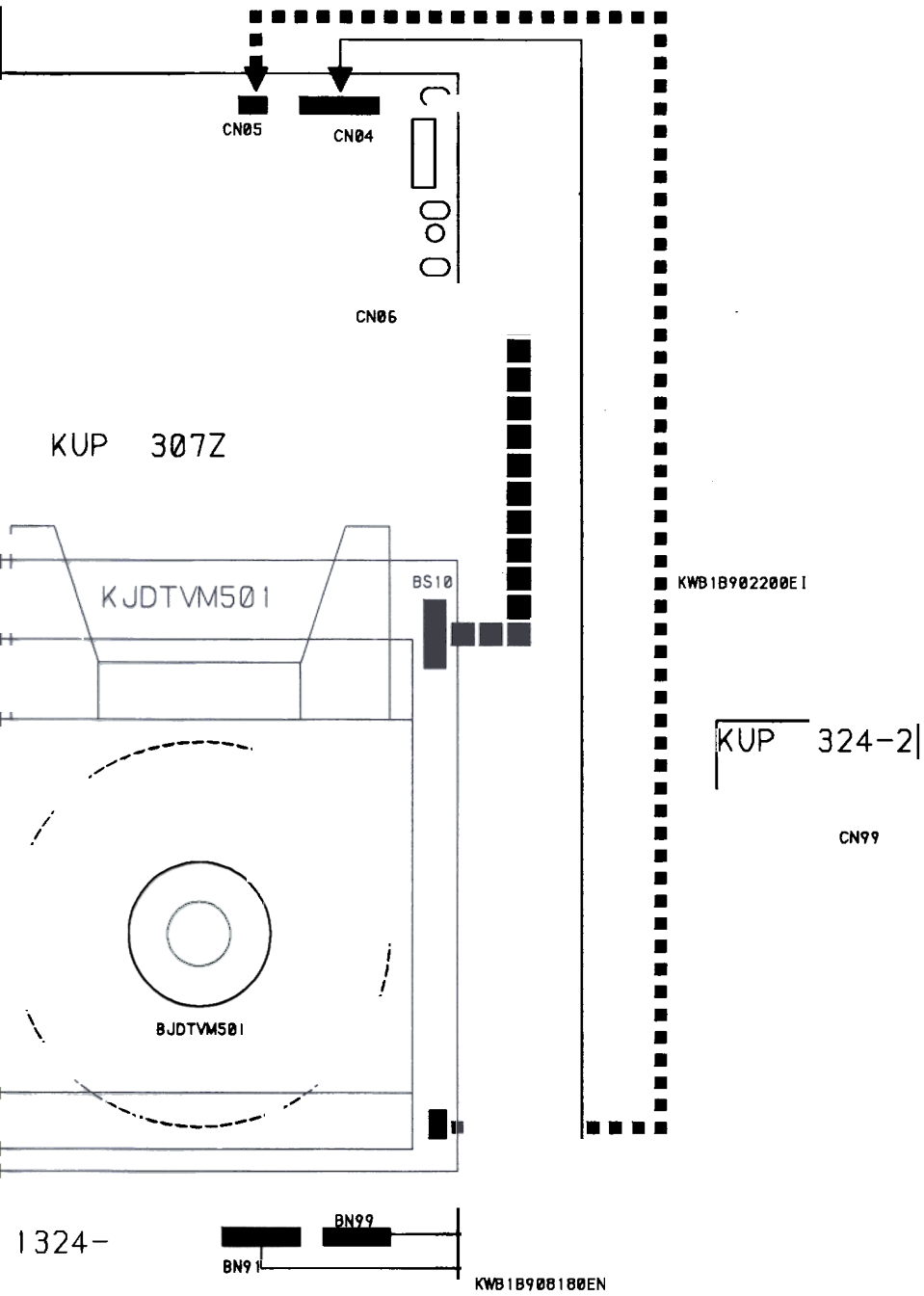


POWER CIRCUIT

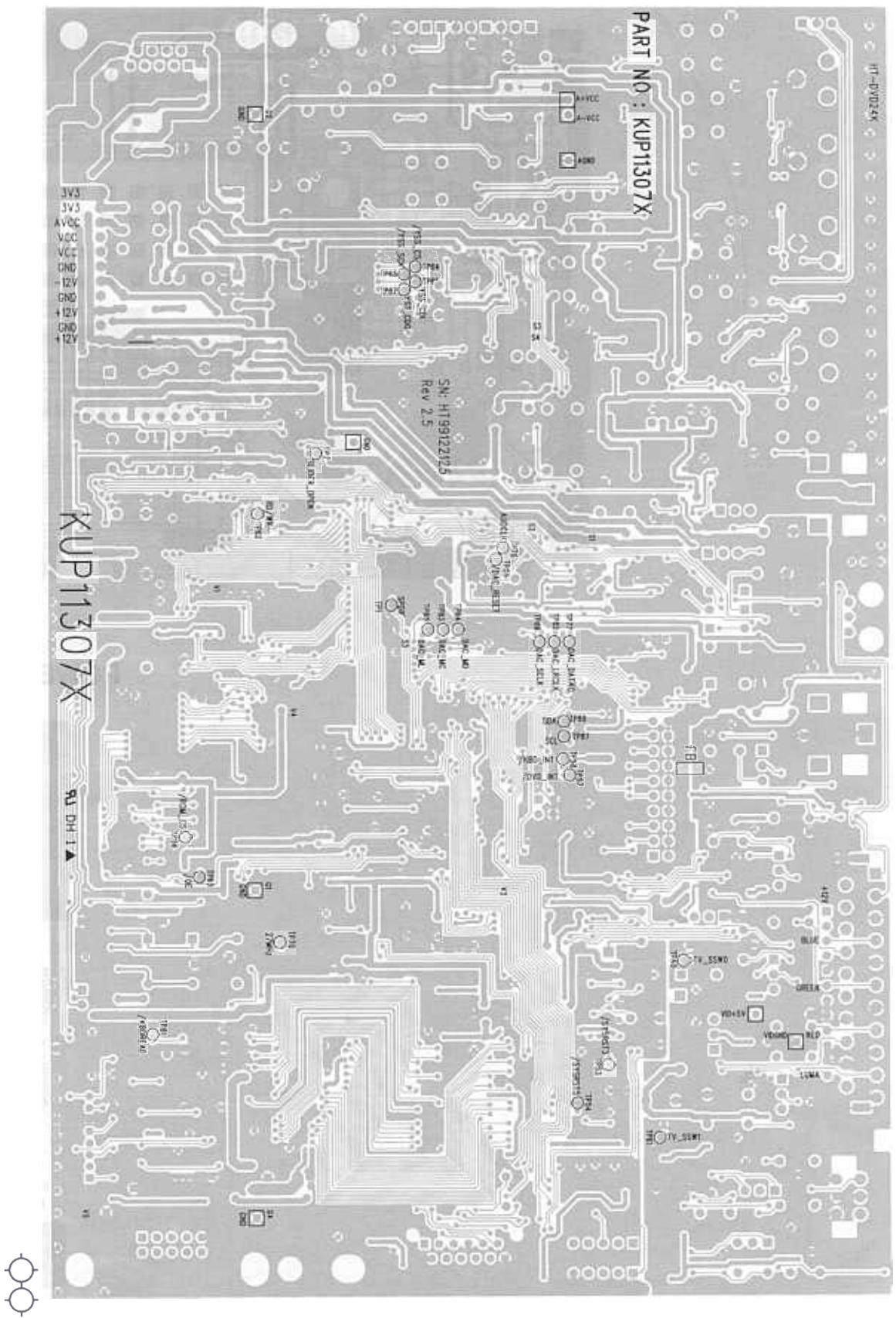


4. WIRING DIAGRAM





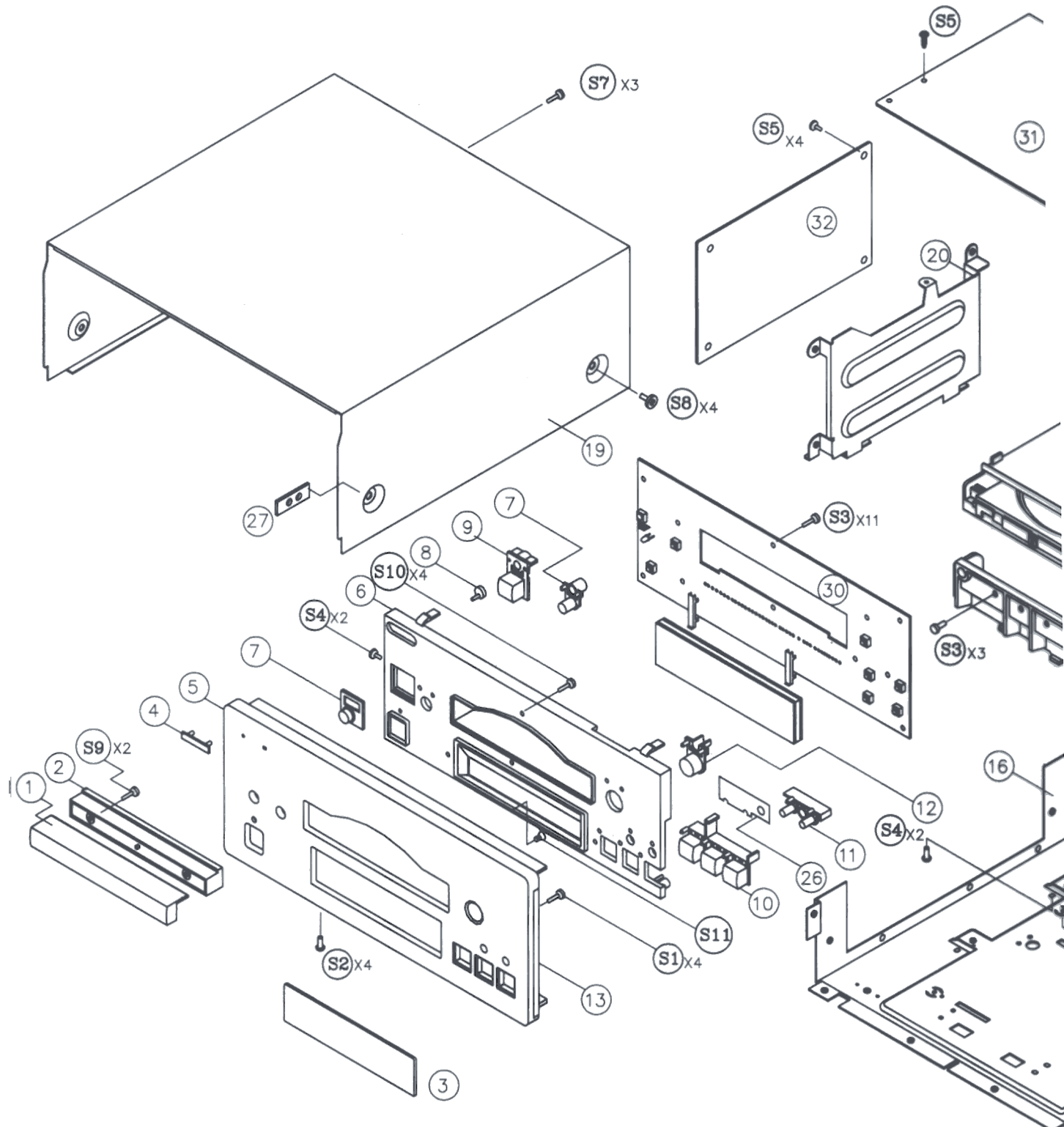
MAIN PCB BOTTOM SIDE



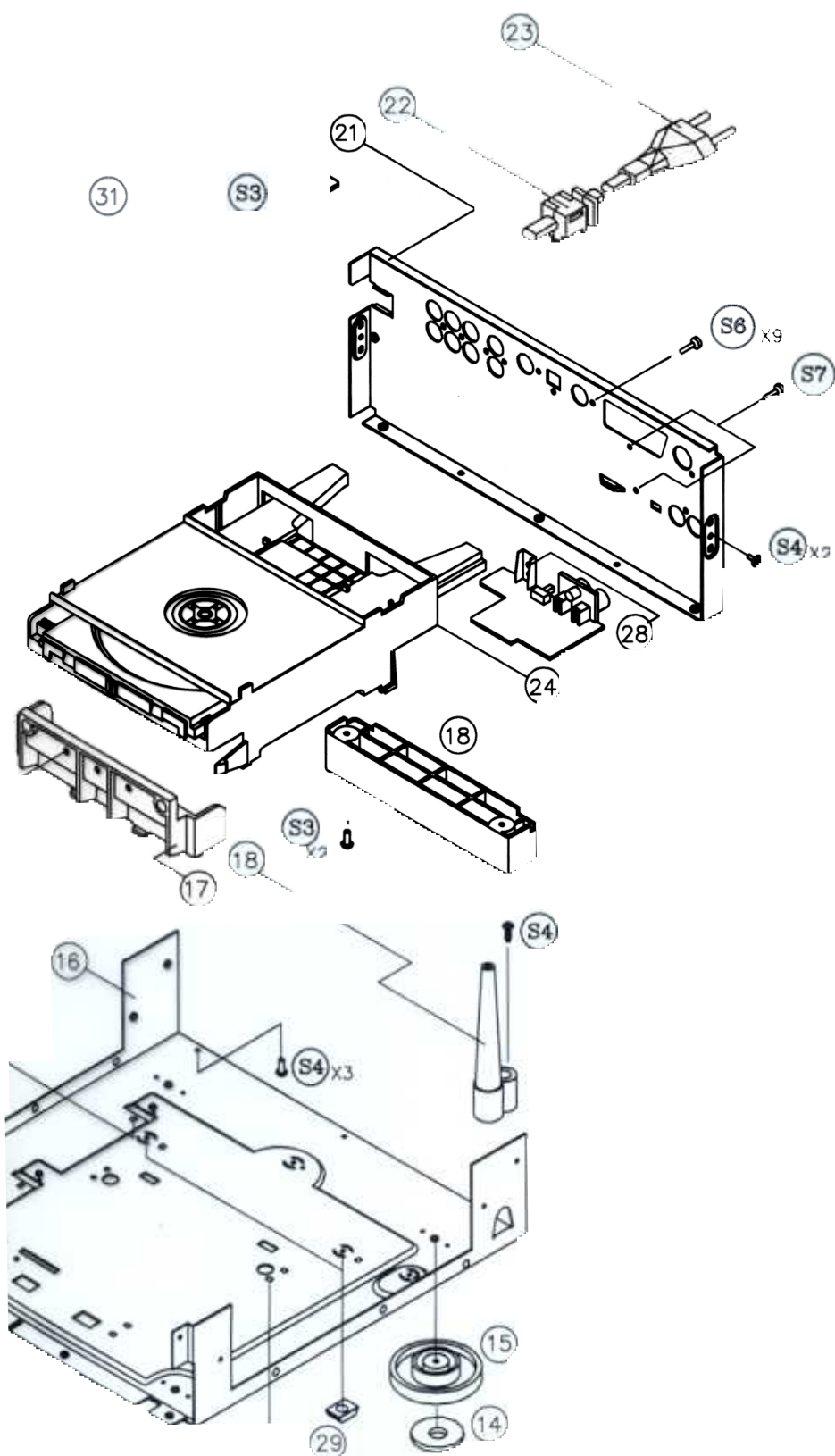
KUP11324Z



DV H500



EXPLODED VIEW



EXPLODED VIEW

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1	9A08145200	ORNAMENT,DVD	KGX1A221WC11
2	9A08145100	DOOR,DVD	KGR1A176K17
3	9A06240500	WINDOW 1A154Y	KGU1A154Y
4	9A06224200	BADGE,TEAC	BGB1A047
5	9A08143700	PANEL,AL	KKM3A054VC11
6	9A07363000	PANEL , SUB	KGW3A179ZK64
7	9A06863500	WINDOW,SENSOR	KGU2A155
8	9A07301300	INDICATOR,POWER	KGL2A120
9	9A07301200	KNOB , POWER	KBT2A387ZK64
10	9A06316000	KNOB , TACT	KBT1A386WK64
11	9A06239700	KNOB , TACT	KBT1A410C13
12	9A06314300	KNOB , TACT (OPEN/CLOSE)	KBT1A385YK64
13	9A06677600	SIDE BAR	KKM1A062C11
14	9A06229300	CUSHION , FOOT	KHG1A039Z
15	9A06315500	FOOT	KKL1A047ZK63
16	9A08158500	CHASSIS,BOTTOM	KUA2A179
17	9A08144400	SUPPORT,MECHA (A)	KMH1A097
18	9A08144500	SUPPORT,MECHA (B)	KMH1A098
19	9A06315900	TOP CABINET	KKC3B077S21
20	9A08144300	BRACKET PCB	KMD1A403
21	9A08144200	PANEL,REAR [J]	KKF2A191WK59
	9A08158600	PANEL,REAR [US, C]	KKF2A191YK59
	9A08152200	PANEL,REAR [E]	KKF3A191XK59
22	9A06754900	BUSHING,AC CORD	KHR1A028
23	9A08144000	POWER,CORD [J]	BJA2J049Z
	9A08043100	CODE,POWER [US, C]	BJA523FBY
	9A08152100	POWER,CORD [E]	BJA2B043Z
24	9A08144100	MECHA ASS'Y	KJDTVM501
25	9A07290000	BRACKET, FLT	KMD1A374
26	9A06316200	PLATE,SHIELD	KMC1A139
27	9A06241700	RUBBER , TRANS	KHG1A143
28	9A06252900	BRACKET , PCB	KMD1A081
29	9A05921700	RUBBER	KHG1A113
30	9A08143900	SUB PCB ASS'Y	KOP11324B
31	9A08144600	MAIN PCB ASS'Y [J, US, C]	KOP11307D
	9A08144620	MAIN PCB ASS'Y [E]	KOP11307B
32	9A08144700	POWER PCB SMPS ASS'Y	KOP11319B
S1	9A06229000	SCREW , SPECIAL	KHD1A016
S2	9A01397400	SCREW KTS3+8J	KTS3+8J
S3	9A01377400	SCREW,KTB3+10G	KTB3+10G
S4	9A01535800	SCREW,KTB3+8J	KTB3+8J
S5	9A05339200	SCREW KTW3+8J	KTW3+8J
S6	9A01377300	SCREW,KTB3+10GFZ	KTB3+10GFZ
S7	9A01377200	SCREW KTB3+8JFZ	KTB3+8JFZ
S8	9A05984300	SCREW KTB4+6FFZ	KTB4+6FFZ
S9	9A01532600	SCREW KTB3+6J	KTB3+6J
S10	9A06316300	SCREW KTB+6F	KTB3+6F
S11	9A06244200	SCREW KTS3+6J	KTS3+6J

INCLUDED ACCESSORIES

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	9A07928800	OWNER'S MNL J, DV-H500 [J]	KQX1A601Z
	9A07928600	OWNER'S MNL E/F DV-H500 [US, C]	KQX1A588Z
	9A07928700	OWNER'S MNL E/F/I/G/S DV-H500 [E]	KQX1A590Z
	9A08143200	REMOCON XMTR AS KRC-4515B	BARTDVH500
	9A08143300	CORD,PHONE KJS4M011Z	KJS4M011Y
	9A05936000	CORD,PIN	KJS4N001Y

SECTION 3

ELECTRICAL PARTS LIST

■ RESISTORS AND CAPACITORS

- Notes :
- Part numbers are indicated for most mechanical parts.
Please use this part number for parts order.
 - The unit of resistance is OHM
K=1000 (OHM), M=1000 (K OHM)
 - The unit of capacitance is MICROFARAD (μF)
P=10⁻⁶ μF

■ Numbering System of Resistor

Example

KRD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
KRD: Carbon	20:1/5W	F:= $\pm 1\%$
KRG: Metal Oxide	25:1/4W	J:= $\pm 5\%$
	50:1/2W	K:= $\pm 10\%$
	1:1W	
KRF: Metal Cement	2:2W	
	3:3W	
KRJ: Carbon DHIP	10:1/10W	
	14:1/4W	

■ Numbering System of Capacitor

Example

KCKR	1H	101	K	B
Type	Voltage	Value	Tolerance	Peculiarity

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
KCB: Ceramic	0J: 6.3V	1H: 50V DC	C: $\pm 0.25\text{pF}$
KCC: Ceramic	1A: 10V	1: 125V DC	G: $\pm 2\%$
KCK: Ceramic	1C: 16V	KC: 400V AC	J: $\pm 5\%$
KCQI: Polyester	1E: 25V		K: $\pm 10\%$
KCQP: Polypropylene	1H: 50V		Z: +80%, -20%
KCQS: Polystyrol	1V: 35V		
KCUC: CHIP			

MAIN PCB ASS'Y

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	9A08144600	MAIN PCB ASS'Y [J, US, C]	KOP11307D
	9A08144620	MAIN PCB ASS'Y E]	KOP11307B
IC02	9A05218300	IC , KA7808-ABTU	KVIKA7808A
IC04	9A05218300	IC , KA7808-ABTU	KVIKA7808A
CN05	9A05328900	WAFER MOLEX 5267-02A	KJP02GA01ZM
CN04	9A05330300	WAFER MOLEX53014-0810	KJP08GA19ZM
IC12	9A05880800	IC , BA6209N MC-D200	KVIBA6209N
D110	9A06239100	MODULE , OPTICAL	BJS9L001Z
JK10	9A06869700	JACK , BOARD	KJJ4N031Z
IC03	9A06883500	IC , KA7908-ABTU	KVIKA7908A
D102- 106	9A01390500	DIODE , 1N4148MT	KVD1N4148MT
D108	9A01390500	DIODE , 1N4148MT	KVD1N4148MT
D109, 111	9A05194000	DIODE , ZENER MTZJ5.1BT	KVDMTZJ5.1BT
L103, 105	9A05356900	COIL , AXAIL 10UH,K	KLQ02C100KT
L106, 107	9A05356900	COIL , AXAIL 10UH,K	KLQ02C100KT
L115	9A05356900	COIL , AXAIL 10UH,K	KLQ02C100KT
Q116	9A05892800	TR , KTC3198YT	KVTKTC3198YT
Q119, 121	9A05892800	TR , KTC3198YT	KVTKTC3198YT
Q104	9A05895900	TR , KTA1266YT	KVTKTA1266YT
Q112- 115	9A05895900	TR , KTA1266YT	KVTKTA1266YT
Q117, 118	9A05895900	TR , KTA1266YT	KVTKTA1266YT
L109	9A05961400	COIL , CHOCK	KLQ04C100KV
L116	9A05961400	COIL , CHOCK	KLQ04C100KV
D101	9A06765300	DIODE , MTZJ5.6BT	KVDMTZJ5.6BT
IC13- 17	9A07343300	IC , OP AMP NJM2068MD-TE1	BVINJM2068MDTE1
IC1	9A08033200	IC , INVERTOR SMD	BVIMC74HC14D
IC9	9A08033200	IC , INVERTOR SMD	BVIMC74HC14D
IC6	9A08149000	IC , 232 RECEIVER MC1489D	BVIMC1489D
IC7	9A08149100	IC , 232 DRIVER MC1488D	BVIMC1488D
IC8	9A08149200	IC , BINARY COUNTER	BVI74HC161D
IC10	9A08149300	IC , SN74HC374D	BVISN74HC374D
IC11	9A08149400	IC , SN74HC245D	BVISN74HC245D
IC18	9A08149500	IC , 74HC32D	BVI74HC32D
IC19	9A08149600	IC , DAC PCM1600	BVIPCM1600
IC22, 23	9A08149700	IC , 16M SDRAM	KVIHY57V161610D
IC25	9A08149800	IC , MPEG ENCODER	BVISTI5505
IC26	9A08149900	IC , FLASH MEMORY 8MBIT TSO	BVI29F800BB90EC
IC27	9A08150000	IC , 16MEDO	KVIKM416C1204CJ
Q101	9A08150100	TR , MUTE KVIUMZ1N	KVIUMZ1N
Q105	9A08150100	TR , MUTE KVIUMZ1N	KVIUMZ1N
"Q111, 120	9A08150100	TR , MUTE KVIUMZ1N	KVIUMZ1N
Q103	9A08150200	TR , MUTE KVIUMX1N	KVIUMX1N
Q106- 110	9A08150200	TR , MUTE KVIUMX1N	KVIUMX1N
D107	9A08158300	DIODE SCHOTTKY , RB721QT77	KVDRB721QT77
L108	9A08158400	COIL , 1.8UH K	KLQ02C1R8KT
L110- 114	9A08158400	COIL , 1.8UH K	KLQ02C1R8KT
BN01	9A08146100	WIRE ASS'Y , KWB1C911180FM	KWB1C911180FM
BN99	9A08146200	WIRE ASS'Y , KWB2B906300EN	KWB2B906300EN
CN03	9A08146300	10P HEADER	KJP10GA80ZP
CN06	9A08146400	HEDER ASSEMBLY , 90325-0012	KJP12GA120ZM
CN07	9A08146500	HEDER ASSEMBLY , 90325-0010	KJP10GA120ZM
JK08	9A08146600	JACK BOARD (ORANGE , PLATE)	KJJ4M030Z
JK09	9A08146700	JACK BOARD	KJJ4R026Z
JK12	9A08146800	JACK S-VIDEO , YKF51-5543	BJJYKF51-5543
JK13	9A08146900	JACK COMPOSITE (GOLD,PLAT)	KJJ4M032Z
X101	9A08147000	OSC 27M , OSC	KOX27000

SUB PCB ASS'Y

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
X901	9A08143900	SUB PCB ASS'Y	KOP11324B
CN99	9A05192900	CRYSTAL , DC-D1800	KOX04194E120C
JK91	9A05329700	WAFER MOLEX53014-0610	KJP06GA19ZM
RZ91- 94	9A06230200	JACK , REMOTE(2P)	KJJ4N023Z
	9A06244000	RES , NETWORK	KRGSN7X104J
SW91	9A06675300	SWITCH SLIDE	KSS2B016Z
RC91	9A06757900	SENSOR , REMOCON	BRVPNA4612M00HB
D903	9A01390500	DIODE , 1N4148MT	KVD1N4148MT
D981	9A01390500	DIODE , 1N4148MT	KVD1N4148MT
D901, 902	9A01390600	DIODE , 1N4148T	KVD1N4148T
Q983	9A05196400	TR , DTA114YST	KVTDTA114YST
Q901- 903	9A05196500	TR , DTC114YST	KVTDTC114YST
Q981, 982	9A05196500	TR , DTC114YST	KVTDTC114YST
L901	9A05356900	COIL , AXAIL 10UH,K	KLQ02C100KT
S901- 908	9A06671200	SW.TACT EVQ21505R	BST1A014ZT
C911	9A08147200	CAP , CERAMIC 100PF 50V J	KCBS1H101JT
D906	9A08147300	L.E.D , RED SLR342VCTB7	KVD342VCTB7T089
IC91	9A08147400	IC OTP , CXP50116	BVICXP50116
BN91	9A08145400	WIRE ASS'Y , KWB1B908180EN	KWB1B908180EN
BN92	9A08145500	WIRE ASS'Y , KWB1B907150GN	KWB1B907150GN
F901	9A08145600	F.I.P HNV-11SM06	KFLHNV-11SM06

POWER PCB ASS'Y

REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
CN92	9A08144700	POWER PCB SMPS ASS'Y	KOP11319B
CN11	9A05356500	WAFER MOLEX53014-0710	KJP07GA19ZM
CN10	9A05890200	WAFER MOLEX 5267-11A	KJP11GA01ZM
	9A06674400	WAFER , 7.92MM (YUNHO)	KJP02KA060ZY

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